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Compiled is information on the application of computer technology to nutrition food service. It is designed to assist dieticians and nutritionists interested in applying electronic data processing to food service and related industries. The compilation is indexed by subject area. Included for each subject area are: (1) bibliographic references, (2) references to and descriptions of talks, (3) reports on the proceedings of meetings, and (4) educational courses or workshops, and applications and research progress reports. (RS)

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MEDICAL DIETETICS
THE OHIO STATE UNIVERSITY
1961

A Compilation of Information on Computer Applications in Nutrition and Food Service

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College of Medicine

THE OHIO STATE UNIVERSITY

A COMPILATION OF INFORMATION ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE

John P. Casbergue, Editor

Prepared by the
Division of Medical Dietetics
School of Allied Medical Professions
THE Ohio State University
Columbus, Ohio

June, 1968

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To the future in dietetics, nutrition and food service

PREFACE

At the First Conference on Computer Applications in Nutrition and Food Service Management, July 1965, participants requested the Division of Medical Dietetics to act as a clearinghouse for information on this new area of technology. An informal and unfunded reporting mechanism was established with the cooperation of several persons who have been active in related research.

In the interim, the volume of available and useful information has grown considerably. Even more important is the increase in interest and applications in dietetics and food service. Electronic Data Processing is fast being recognized as a useful tool in dietetics and food service management. Progress has been perhaps slowed by a lack of understanding of the subject and also, by a lack of readily available reference material.

Some who might have initiated work in the subject area may have been hampered by this information gap. Still others may have duplicated work already accomplished but not yet described in print. The waste of our limited human resources can be ill afforded.

The intent of this Compilation of information is to provide a reference source to students, research or operations personnel. The compilation was accomplished with the assistance of a number of people, listed in the following pages. It includes bibliographic references, personal communications and pertinent activities or materials known to the Editor. There was no survey of any group due to financial limitations.

There will no doubt be omissions. The Editor apologizes for any oversights but such oversights serve to emphasize the need for an open exchange of information whether by a clearinghouse or other more formalized mechanism.

Persons interested or active in applications are invited to make their work known to this "clearinghouse". A great many persons, agencies and institutions have requested information and have been directed to those research or operations personnel who might be interested or able to provide assistance. The continuance of this informal assistance and the publication of any subsequent compilations will be contingent upon the usefulness of this effort. It is sincerely hoped by the Editor and the Contributors that readers will find this endeavor worthwhile.

The Editor would like to express his appreciation to the many listed and unlisted contributors to this Compilation and to Martha N. Lewis, Director of the Division of Medical Dietetics who made this publication possible by the provision of secretarial assistance.

John P. Casbergue
June, 1968

FORMAT, CITATION AND GENERAL INFORMATION

Citations from varying sources have been arranged to be generally consistent in style. Citation content may vary somewhat (page number(s)) depending on whether this information was available without review of the article by the Editor. Publication citations carry: author name, if known; title; publication name (as listed in INDEX MEDICUS or in same style if not listed); volume (V) number, if known; and date.

MEDLARS: Medical Literature Analysis and Retrieval System

Four world wide MEDLARS searches were completed at the Ohio State University Computer Center (using the National Library of Medicine's magnetic tape file). This is a computer based information system in which publications included in the system are reviewed and recorded using a subject word method. Using the desired subject words and a mathematical formulation, MEDLARS' users can state criteria for information subject(s), desired time period and English and/or foreign language publications. The citations included in this compilation met the subject word criteria in one parameter (automation, automatic data processing, and/or electronic data processing) and also in the second parameter (any subject word listed in file that was related to food, food service or nutrition). The initial search covered the period from when MEDLARS began (starting with materials included in INDEX MEDICUS, January, 1964) until June, 1967. Three subsequent searches were updating runs to detect new publications meeting these two parameters. MEDLARS citations are indicated as such in this compilation.

ABSTRACTS: Descriptive texts as provided by contributors or from other abstracting publications. No alterations to text contents were made by the Editor.

EXTRACTS: Quotations that are taken directly from source publications, letters, reports or other media. Used to give reader the general subject of material without the abstracting function.

APPLICATIONS AND RESEARCH PROGRESS REPORTS: Citations include only those known to Editor via personal communication or as reported by contributors or others. There was no survey mechanism established.

CONTRIBUTORS AND PERIODICALS REVIEWED

The following are the major contributors to this publication. They provided monthly reports on materials the contributors judged appropriate for inclusion. References, abstracts or extracts are as forwarded; no editing or formal cross checking was attempted.

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Miss Beulah Hunzicker Associate Professor Dept. of Home Economics University of Illinois Urbana, Illinois 61803	Harvard Business Management Bulletin AMA Management Reviews AMA Volume Feeding Management
Marie E. Knickrehm, Ph.D. Professor Institute Management Division University of Nebraska College of Agriculture and Home Economics Lincoln, Nebraska 68503	(Ceased participation, Dec, 1966, periodicals were covered by others) Journal American Dietetic Association Hospitals Modern Hospitals Food Technology
Miss Maxine Merrick Dietitian Veterans Administration Dept. of Medicine & Surgery Washington, D.C.	Food Management in Hospitals and Nursing Homes Food Management in Plants and Business Food Management in School and College Quick Frozen Foods Hospitality
Grace L. Ostenso, Ph.D. 5855 North Sheridan Road Chicago, Illinois	Science Journal of Industrial Engineering
Mrs. Grace Shugart Professor and Chairman Dept. of Institutional Management Justin Hall Kansas State University Manhattan, Kansas 66504	Journal American Home Economics Journal of Food Science Cornell Hotel and Restaurant Admin Quarterly Nations Business
Victor E. Smith, Ph.D. Professor Dept. of Economics Michigan State University East Lansing, Michigan	American Economics Review Journal of American Stat Assn Econometrics

Clarice Taylor and M. Colleen McCann Room 19 Human Development Building Pennsylvania State University University Park, Pa. 16802	Hospital and Comm Psych Institutions Cooking for Profit Hospital Management National Provisioner Modern Packaging Comm Kitchen and Dining Food Service Magazine
Mrs. Byrdine Tuthill Assistant Director University of Missouri Dept. of Nutrition and Dietetics W. 130 Medical Center Columbia, Missouri 65201	Journal Clinical Nutrition School Lunch Journal

Other periodicals reviewed by the Editor or other members of the faculty of the Division of Medical Dietetics include:

Journal of the Canadian Dietetic Association
American Education
Data Processing Digest
Educational Leadership
Phi Delta Kappan
Science News
Scientific American
Theory Into Practice
Baker's Digest
Canadian Nutrition Notes

The following publications graciously permitted quotations; credit is indicated whenever material was so obtained:

Abstracts of Hospital Management Studies
    The Cooperative Information Center for Hospital Management Studies
    The University of Michigan, Ann Arbor, Michigan
Journal of American Dietetic Association

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ACCOUNTING

ANON

AUTOMATED PAYROLL SYSTEM. Institutions (Aug)1965.

COMPUTER PROVIDES INSTANT UPDATING OF PERPETUAL INVENTORY AT MISSOURI MEDICAL CENTER. Hospitals p158-160.

COMPUTERS DETER UNPAID CHECKS. Institutions (Jan)1965 p145.

EDP AND THE AUDITOR. Amer Management Assn New York, Management Bulletin No. 81 1966 p47.

EDP AUTOMATION ON A BUDGET. Institutions (Nov)1963 p87-91.

ANDREWS, JANET T DEVELOPMENT OF A FOOD COST ACCOUNTING SYSTEM USING ELECTRONIC DATA PROCESSING. Masters Thesis, Univ of Missouri 1967.

Abstract: The purpose of this study was to develop a method of determining the cost of food sent from a central kitchen and storeroom to the various service units in the University of Missouri Medical Center utilizing electronic data processing. Recipes for prepared food were standardized so that their yield was accurate within plus or minus five per cent. The recipe data were stored on magnetic tape and costed by the computer using current purchase price data from the computerized inventory system. The amounts of prepared food sent to the cafeteria were transmitted to the computer at the end of each day. Run daily was a program which costs the prepared food, retrieves the cost of direct issues from the inventory system, and prints the information in the form of a daily food cost report. The following reports are generated by this system: (1) Recipe Syllabus including a list of all the recipes which are stored on tape and their current cost information, (2) File of Costed Recipes containing the data given to the computer about one recipe, and (3) Daily Analysis of Food Cost and Income including the actual food cost for each area of service, per cent food cost or average cost per patient day, and to-date food cost, income and per cent food cost for the week and month. By employing the powers of cybernetics, it now becomes practical to obtain the current cost of prepared food sent from a central kitchen to each service area within the organization. In addition this system provides a method of costing all recipes each time purchase prices change. (author).

ANDREWS, J, MOORE, A, and TUTHILL, B ELECTRONIC DATA PROCESSING IN INTRA-DEPARTMENTAL FOOD COST ACCOUNTING. J Amer Diet Assn V51(Oct)1967 p332-335.

Abstract: A study of a data processing system for determining daily food costs for each unit in a medical center. A computer was used to standardize a summer menu of about 200 recipes and to determine its cost per serving and per pound. Forms for recording and identifying data were developed. Study concludes a data processing system of cost accounting is valuable in determining and justifying charges but work is needed to develop methods of identifying labor and overhead costs. (Abstract of Hospital Management Studies, March 1968).

BARNETT, MAXINE HOW DATA PROCESSING OF OUR ROUTE ACCOUNTING SAVES US MONEY. Bakers Weekly (Jan 4)1965 p22-29.

HOMER, C and PUGH, W COMPUTER TERMINOLOGY FOR THE AUDITOR. Amer Management Assn, Management Bulletin No. 81 1966. (Hunzicker)

McCALLUM, ROSS NOW: ELECTRONIC BOOKKEEPING FOR RESTAURANTS. Canadian Food Jour (May) 1963.

ROLLINS, ROBERT DATA PROCESSING KEEPS TABS ON FOOD COSTS. Hosp Nurs Home Feeding V2(April) 1964 p28.

TAYLOR, THAYER NOW-SALES ANALYSIS BY COMPUTER. Management Rev (May)1966 p68-72.

WAGNAN, RAYMOND SIMPLIFIED DATA PROCESSING SYSTEM IS FEASIBLE FOR THE SMALLER CLUB. Club Management (June)1966 p22-23.

COMPUTER-ASSISTED MENU PLANNING

ANON

COMPUTER-ASSISTED MENU PLANNING. Data Processing Magazine V9(Dec)1967.

COMPUTERIZED DIETARY INFORMATION SYSTEM, Procedural Manuals Grad School Bus Admin, Tulane Univ

Volume I.	Data Organization and Collection Procedures. Detailed procedures for providing input to the computer to create the basic food, nutrient and recipe data files.
Volume II.	Data Processing Programs. Description of the Tulane Computer System and the computer programs operating with the input data prepared according to Volume I.
Volume III.	On-Line Terminal System. Description of the on-line system using IBM 1050 terminals and the computer programs developed for use through the terminals in the areas of information retrieval and file maintenance.

To be Announced

Volume IV.	Menu Planning and Scheduling by Linear Programming in Single-Stage.
Volume V.	Planning and Scheduling Optimum Menus in Multi-Stage.

DIETITIANS WORK WITH 'MR. C.' (C IS FOR COMPUTER IN PLANNING MENUS). Hospitals V40(July 16) 1966 p132.

Abstract: Describes least cost non-selective menu planning by computer as performed at Sara Mayo Hospital. Three other hospitals are going to use the process in the future. Lists the input data necessary for the project. The computer can list menu items in order of ranking of their content of a specific nutrient which might be of value to therapeutic dietitians. The computer can also calculate recipes for any desired yield. There is still much to be done in this area: planning selective menus; planning for flexibility in recipes to take advantage of prices of various ingredients; combining inventory system, purchasing and computer menu planning, etc. (Knickrehm).

HOW COMPUTER CAN AID MENU PLANNING. College Univ Bus V40(May)1966.

Abstract: Describes concept of computer-assisted menu planning and some implications for the food service industry. The use of a remote computer terminal linking Ohio State University to the Tulane University is discussed. Undergraduate students in the Division of Medical Dietetics gained understanding of this concept by planning menus meeting nutrient and cost constraints.

MATHEMATICS 'n MENUS. School and College Food Management V3(April)1967 p22-25.

MENU PLANNING BY COMPUTER. Professional Nurs Home V9(Oct)1967.

MENU PLANNING WITH COMPUTER. EDUCOM (April)1966 p6-7.

NEW APPROACHES: MENUS BY COMPUTER. Food Technol V20(Sept)1966 p79.

Abstract: Describes briefly the planning of menus for Sara Mayo Hospital in New Orleans under the direction of Dr. Balintfy and the research team at Tulane University. The computer planned menu cost 32 cents less per patient per day. The project involves a $242,600 grant from the National Institute of Health. (Knickrehm).

THE NEW DIMENSION IN MANAGEMENT. Institutions (Sept)1966 p79-82.

Abstract: A case history report of the use of the Tulane University computer by the dietitian of 108-bed Sara Mayo Hospital, New Orleans, in multi-stage menu programming, rank nutrient searching, and determining hours entirely by hand to four minutes and three seconds using the computer. (Abstracts of Hospital Management Studies, March 1967).

SARA MAYO LOVES THE COMPUTER. Hosp Nurs Home Food Management V3(April)1967 p24.

TULANE UNVEILS COMPUTER PROGRAM TO DETERMINE BEST MENU SELECTION. Mod Hosp V106(June)1966 p30.

Abstract: Report of menu planning by hospitals that are connected with the computer at Tulane University. (Knickrehm).

BALINTFY, JOSEPH L and BLACKBURN, C.R A SIGNIFICANT ADVANCE IN HOSPITAL MENU PLANNING BY COMPUTER. Institutions V55(July)1964 p54-57.

BALINTFY, JOSEPH L and BLACKBURN, C.R COMPUTER APPLICATIONS FOR SCIENTIFIC MENU PLANNING. Institutions (July)1964 p53-55.

BALINTFY, JOSEPH L and VETTER, E.W COMPUTER WRITES MENUS. Hosp Top V42(June)1964 p49-52.

BALINTFY, JOSEPH L and BALINTFY, S.K DIETARY INFORMATION PROCESSING BY COMPUTER. Computer Syst Res, School of Bus Admin, Tulane Univ No. 6 (May)1964.

Abstract: Covers design and operation of integrated dietary information processing system. Methods of processing and retrieving dietary information are described. Computer programmed to calculate and store cost and nutrient composition of menu items using coded recipes and basic data on coded food items. Using master diet card of each patient as data, computer daily and simultaneously (1) printed in duplicate a diet sheet for each ward (2) prepunched three menu cards for each patient. (Abstracts of Hospital Management Studies, June 1, 1966).

BALINTFY, J.L and STAFF DIETARY INVENTORY ACCOUNTING SYSTEM BY COMPUTER FOR THE U.S. PUBLIC HEALTH SERVICE HOSPITAL, NEW ORLEANS. Computer Syst Res, School of Bus Admin, Tulane Univ (May)1967.

BALINTFY, JOSEPH L and NEBEL, E.C EXPERIMENTS WITH COMPUTER-ASSISTED MENU PLANNING. Hospitals V40(June 16)1966 p88.

Abstract: Experiments are reported comparing three types of menu planning; menu planning by dietitians without computer assistance, computer assisted menu planning, and random menu planning. The results demonstrate the feasibility of using the combination of the computer and the dietitian to plan menus meeting the requirements related to cost, acceptability and nutritive value. (Knickrehm).

Abstract: Further studies of the usefulness of the Balintfy computer-assisted menu planning system. Reports data from trials with 16 volunteer dietitians. Conventional techniques, the computer-assisted technique, and random selection of given types of food are compared according to patient preference, acceptance by a four dietitian panel, nutrients, and cost. Data are also presented on the learning curve of dietitians using the computer-assisted program. (Abstracts of Hospital Management Studies, Dec 1966).

BALINTFY, JOSEPH L et al. FORTRAN PROGRAM FOR SIMPLEX LINEAR PROGRAMMING WITH UPPER BOUNDS. Computer Syst Res, School of Bus Admin, Tulane Univ 1965.

BALINTFY, JOSEPH L LINEAR PROGRAMMING MODELS FOR MENU PLANNING. Case study in Hospital Systems Improvement Through Industrial Engineering, by Smalley, H.A, and Freeman, J.R, Reinhold Publishing Corporation. 1966 Chapter 24 p402-408.

BALINTFY, JOSEPH L THE MATHEMATICAL FOUNDATIONS OF MENU PLANNING. Computer Syst Res, School of Bus Admin, Tulane Univ (April 5)1965.

BALINTFY, J.L MATHEMATICAL PROGRAMMING FOR MENU PLANNING. Presented at the Indus Engin Hosp Seminar, Univ of Mich, Ann Arbor (Feb 12)1964. (Abstracted in Abstracts of Hospital Management Studies, VI p27).

BALINTFY, J.L and STAFF MENU BY COMPUTER OPERATING MANUAL. Computer Syst Res, School of Bus Admin, Tulane Univ 1964.

BALINTFY, JOSEPH L MENU PLANNING BY COMPUTER. Comm of the ACM. V7(April)1964 p255-259.

Abstract: This article describes a fast, special integer programming algorithm which approximates the theoretical solution of the problem of menu planning. Discussion is limited to the solution of the simplest type of institutional menu planning problem. A short description of the data processing work is outlined. Author states that dietary information processing should be based on standardized recipes, portion sizes and on the classification of menu items according to desired number and structure of menu components for meals per day. A new approach to an efficient computer code for the menu problem was derived from the special structure of the L.P. problem, as present state of art in mixed integer programming and standard L.P. codes would not make the application of the exact model economically feasible. Tables show the problem and solution. Program described works within economic limitation assumed by providing the option of online adjustments (i.e. calculations are performed in not more than a minute). Describes menu program (written for an IBM 1410 system -40K-) and comparison between menu plans in general use and those planned by computer. Found a 30% saving average daily cost with computer planned menu. FORTRAN program for IBM 1410 system now operational and available. Similiar program for 1440 system is under consideration. (Abstracts of Hospital Management Studies, June 1, 1965).

BALINTFY, JOSEPH L and PREKOPA, A NATURE OF RANDOM VARIATION IN THE NUTRIENT COMPOSITION OF MEALS. Health Serv Res V1(Fall)1966 p148-169.

Abstract: The mathematical formulation of nutrient variation in meals is presented by means of random vectors. The primary sources of nutrient variation in unit portions of menu items are identified and expressed in terms of random food-nutrient, random portion size and random ingredient composition variations. A secondary source of nutrient variation can be traced to the random selection process of combining menu items into individual meals from multiple choice menus. The separate as well as the joint effect of these sources on the total variation of the nutrient content of meals is described with the aid of variance-covariance matrices. The investigation is concluded with the formulation of multivariate probability statements concerning the adequacy of the nutrient content of meals relative to the distribution of the nutrient requirements over a given population. (Abstracts of Hospital Management Studies, March 1967).

BALINTFY, JOSEPH L and PREKOPA, A THE NATURE OF RANDOM VARIATION IN THE NUTRIENT COMPOSITION OF MEALS. Part I. School of Bus Admin, Tulane Univ Res Paper No 13 (Unpublished) (Aug)1965.

BALINTFY, JOSEPH L THE NEW DIMENSION IN MANAGEMENT SARA MAYO HOSPITAL. Institutions (Sept) 1966 p80-82.

BALINTFY, JOSEPH L OUTLINE OF A CENSUS-PREDICTOR MODEL FOR GENERAL HOSPITALS. In Hospital Industrial Engineering: A Guide to the Improvement of Hospital Management Systems. Reinhold Publishing Corporation 1966. Chapter 19 p312-316.

BAUST, ROGER T COMPUTER-ASSISTED MENU PLANNING. Data Processing Magazine (Dec)1967.

BAUST, ROGER T STUDY OF COMPUTER PROCEDURES FOR MENU PLANNING AND RECIPE SERVICE FOR DoD ELEMENTS. U.S. Army Natick Laboratories, Natick, Mass. 01760 (July)1967.

Abstract: "A survey of present status of computerized menu planning accomplishments and research showed that no computerized menu planning system now exists in any military service, and there are no present plans to develop one. The U.S. Navy and Marine Corps have no accomplishments in computerization of food service which would have a bearing on the development of a system. Both U.S. Army and Air Force accomplishments are in the area of Food Plan recapitulation and nutrient content and costing verification. These are fully compatible with the system model proposed. The Food Service Division, Walter Reed General Hospital, is conducting research on a comprehensive food service system of which menu planning is a minor and final part. Although specific for hospital part of the system may be useful for a general troop feeding system. The Veterans Administration computerized procedure, which develops a 28-day Food Plan from which dietitians manually construct menus, may provide guidance for a DoD system. Accomplishments and research in university hospitals are not directly applicable to military feeding. They are directed toward a demand-based stochastic system, whereas the military services use a plan-based deterministic system. The Food Plan precedes and is more important than the menu. The Food Plan changes relatively slowly, and much of the clerical routine is now computerized. A model food service system has been presented which includes a Planning subsystem and a Service subsystem and which interfaces with a Supply system. Implementation of this system would result in a "Continuous Food Plan" which could materially shorten lead time in the present food cycle. Optimization of the Planning subsystem requires research to codify and evaluate color, texture and preference factors and the combinatorial effects of these with other factors; evaluate frequency limit restraints; investigate mathematical models which may be better than linear programming; and develop improved computer "learning models" to capitalize on man-machine interactions." (Author).

BLACKBURN, C.R and BALINTFY, J.L A DIETARY INFORMATION SYSTEM WITH ON-LINE COMPUTER ASSISTED MENU PLANNING. Computer Syst Res, School of Bus Admin, Tulane Univ (April)1966.

BROWN, ROBIN MARY AUTOMATED MENU PLANNING. Master's thesis, Kansas State Univ, Manhattan, Kan. 1966.

CASBERGUE, JOHN P, KELLER, M.D, SHUGART, C, and SMITH, V.E PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT. Medical Dietetic Program. Ohio State Univ, (July 26,27)1965 p24.

Abstract: Computers and Nutrition. . . The Proceedings of the First Conference on Computer Applications in Nutrition and Food Service Management have been published. Sponsored by the Medical Dietetic Program of Ohio State University, Columbus, the July 1965 conference brought together some of the country's leading researchers in computer-assisted menu planning and management. Specific objectives of the meeting concerned the exchange of information on the application of computer technology to menu planning and nutrition, food production management and service, and design simulation of food service systems. Early discussions covered food service systems in a medical environment, but the conference also dealt with computer applications in a variety of food services. These included commercial restaurants, hotels, colleges and universities, military organizations, and other large institutions. There was general agreement among the conferees that the introduction of computers into food service operations during the next decade will come slowly enough so that it will have negligible effect on the work of most dietitians and food service managers. These people will be doing basically the same things they are now doing. But the dietitian will be freed of manual nutritional computations and will have less need to remember specific nutrient composition data. The food service manager will spend less time with the repetitive tasks of purchasing, inventory control, and cost analysis and control. More time can be spent on creative pursuits and on human decision-making. . . J.P. Casbergue et al., The Medical Dietetic Program, Ohio State University, Columbus, July 1965 37 pages Order Stock No. PB-170 944 -- PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT from Clearinghouse, U.S. Department of Commerce, Springfield, Va. 22151, price $3.00 (microfiche 65 cents).

CASBERGUE, JOHN P MEDICAL DIETETIC STUDENTS PLAN MENUS WITH COMPUTER ASSISTANCE. Hospitals V40(June 16)1966 p96-97. MEDLARS

Abstract: The concepts of electronic data processing and computer assisted menu planning were introduced in an undergraduate course in menu planning in the Division of Medical Dietetics at Ohio State University. Students gained on-line menu planning experience by means of a computer terminal in the Columbus, Ohio classroom linked by phone to the Tulane University computer center in New Orleans. The programs were developed by Dr. J.L. Balintfy, These experiences provided not only application while learning about planning menus with computer assistance but also demonstrated how educational programs and food service systems can utilize computer systems from remote locations in meeting their respective goals. (Author)

CASBERGUE, JOHN P MENU PLANNING, AN OVERVIEW. In Study of Computer Procedures for Menu Planning and Recipe Service for DoD Elements. Tech Report 68-2-FL, U.S. Army Natick Laboratories, Natick, Mass (July)1967.

Abstract: A review of the state of the art and a description of data collection considerations and requirements. Education of professional staff and long term planning are stressed as requirements before actual system planning is initiated. (Author).

ECKSTEIN, ELEANOR FOLEY PROGRAMMED MENU PLANNING. Master's thesis Univ of Wash, Seattle (Aug)1966 p103.

ECKSTEIN, ELEANOR FOLEY MENU PLANNING BY COMPUTER: THE RANDOM APPROACH. J Amer Diet Assn V51(Dec)1967 p529-533.

Abstract: A discussion of planning menus with a computer, using a random approach, and simulating the process followed by a dietitian in making routine menu decisions. Study used as bases for selection criteria: raw food cost; color; texture; shape; calories; variety; and acceptibility. Items for each meal component were randomly selected and tested by program controls until certain criteria were met. (Abstracts of Hospital Management Studies, March 1968).

FELLER, JOHN D THIS SYSTEM WAS DESIGNED FOR COMPUTERS. Mod Hosp V105(Oct)1965.

FIELDING, VERA V COMPUTERS TELL WHAT TO PUT ON THE MENU. Mod Hosp V120(April)1963 p122-124.

FREEMAN, RAOUL J COMPUTATIONAL EXPERIENCE WITH A 'BALASIAN' INTEGER PROGRAMMING ALGORITHM. Operations Res V4(Sept-Oct)1966.

Abstract: Menu planning by computer requires the use of zero-one integer programming algorithms. Balas has developed one of the more promising algorithms. This paper describes some computational experience with a version of the algorithm and discusses future avenues of research that may be undertaken. (Gue).

GUE, RONALD L, LIGGETT, J.C and CAIN, K.C ANALYSIS OF ALGORITHMS FOR THE ZERO-ONE PROGRAMMING PROBLEM. Tech Report CP68-01, Computer Sciences Center, Southern Methodist Univ, Dallas, Texas (Jan)1968.

Abstract: This paper is concerned with a review and examination of several existing algorithms for the zero-one programming problem. Computational experience is summarized. The machine time and storage requirements of several of the algorithms are compared over several test problems of small and intermediate size. (Author).

GUE, RONALD L A DECOMPOSITION PRINCIPLE FOR THE ZERO-ONE PROGRAMMING PROGRAM. Tech Report CP67102, Computer Sciences Center, Inst of Tech Southern Methodist Univ, Dallas, Texas 75222.

Abstract: Several recent publications have been concerned with the linear programming problem where the variables are constrained to take on values of zero or one. A decomposition principle for these problems when they have the block-angular form is developed. The concepts are applied to two existing algorithms. (Author).

GUE, RONALD L and LIGGETT, J.C MATHEMATICAL PROGRAMMING MODELS FOR HOSPITAL MENU PLANNING. J of Indus Engin V17(Aug)1966.

Abstract: This article outlines the use of mathematical programming models in planning two types of hospital menus; selective and non-selective. A zero-one programming model for planning non-selective menus is summarized. A stochastic zero-one programming problem for planning selective menus is developed. Results of the implementation of these concepts in an operating hospital are discussed. (Gue).

GUE, RONALD L SELECTIVE MENU PLANNING BY COMPUTER. Kitchen Planning V2(Winter)1965.

Abstract: At present, research directed toward the use of mathematical programming and the digital computer in menu planning is primarily concerned with non-selective menus. Initial methods developed at Tulane University were studied by a research group at the University of Florida to determine whether their formulations could be used or adapted for use in a selective menu system. After computer programs were developed for selective menus, a pilot study was conducted by serving patients computer-planned menus for a two-week period in August, 1965, and found to be successful. Projected savings at the University of Florida are approximately 6 to 8 cents per patient day; the author seems to feel that even greater advantages could be derived from a regional dietary planning and control system. (Abstracts of Hospital Management Studies, Sept 1967).

GUE, RONALD L and LIGGETT, J.C SELECTIVE MENU PLANNING BY COMPUTER. Tech Report CP67101 U.S.P.H.S. Grant No HM 00464-01, Computer Sciences Center, Inst of Tech, Southern Methodist Univ Dallas, Texas 1967.

Abstract: Report deals with research at the University of Florida Teaching Hospital on the application of mathematical models to problems of menu planning for hospital patients. Problem formulation and development of algorithms for non-selective and selective menu cycles are discussed. An integer programming model similiar to one first proposed by Balintfy is explored in detail. Program and illustrations are given. (Abstract of Hospital Management Studies, March 1968).

GUE, RONALD L SELECTIVE MENU PLANNING BY COMPUTER. In PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH, Cornell Univ, Ithaca, New York (Oct 4,5)1965.

HARTMAN, J COMPUTERS CAN CUT MENU-PLANNING COSTS. Mod Hosp V102(Feb)1964 p134.

HOUSE, R.W and RADO, T ON A COMPUTER PROGRAM FOR OBTAINING IRREDUCIBLE REPRESENTATIONS FOR TWO-LEVEL MULTIPLE INPUT-OUTPUT LOGICAL SYSTEMS. J Assn for Computing Machinery V10(Jan)1963.

LUBBOCK, JAMES E PALATABILITY UNCHANGED, COST DOWN NUTRITION EXACT WITH COMPUTER PLANNED MENUS. OJIBWAY Food Serv Magazines In Press (April)1968.

MALMO, PAUL PERSONAL COMMUNICATION (Aug 4, 1967) Food Service Manager Assn Methodist Homes 11 West Aloha St, Seattle, Wash 98119.

Abstract: Mr. Malmo has been studying the eating habits of residents of retirement homes. Studies directed toward acceptance, variety and repetition of dinner entrees. The object is to assess relative satisfaction values to 41 entrees in seven week cycle. He described a linear programming model developed to provide an optimal combination of entrees. He intends to expand this model to include the total menu. (Casbergue).

NELSON, LARRY DEAN ON A SPECIAL CLASS OF PROBLEMS IN INTEGER LINEAR PROGRAMMING. Ph.D. Thesis, Ohio State University 1965.

NETER, JOHN and WASSERMAN, W POTENTIALS IN APPLYING LINEAR PROGRAMMING TO THE CONSUMER PRICE INDEX. J of Amer Statis Assn V61(Dec)1966 p982-994.

Abstract: Discusses in a general way, the use of linear programming to determine the least cost diet that will meet specified standards of nutrition, variety, palatability, etc. (Smith, Victor E.)

SMITH, VICTOR E ELECTRONIC COMPUTATION OF HUMAN DIETS. Mich State Univ Bus Studies, East Lansing, 1963.

SMITH, VICTOR E LINEAR PROGRAMMING MODELS FOR THE DETERMINATION OF PALATABLE HUMAN DIETS. J of Farm Econ V41(May)1959.

Extract: "These models are based upon the assumption that conformity to conventional patterns of food purchase is one way to control the level of palatability of a diet. The more conformity built into the model, the less economy we can expect from the solution. However, even our large model solution represents a respectable degree of economy in comparison with actual food expenditures. The cost of this diet per meal per person amounts to only $0.17. No family in the Michigan State University Consumer panel in 1953 obtained 100 per cent or more of each of the nutrients recommended by the Food and Nutrition Board if it spent as little as $0.20 per meal per person, and only 15 per cent of the families that spent between $0.21 and $0.25 per meal per person achieved this standard. Even expenditures above $0.40 provided only 69 per cent of the families with 100 per cent of each of the allowances. From the nutritional point of view there appears some room for improvement in the use of food expenditures. As nutritionists know, the allowances themselves represent an oversimplified statement of nutritional requirements. Dietitians rely heavily on variety as a means of providing nutrients that are essential but unspecified; programming models that provide plenty of variety may accomplish the same objective."

WASSERMANN, WILLIAM and NETER, J POTENTIALS IN APPLYING LINEAR PROGRAMMING TO THE CONSUMER PRICE INDEX. Bus and Econ Statis Section, Amer Statis Assn 1964 p241-248.

FOOD SERVICE MANAGEMENT, FOOD SERVICE PLANNING

ANON

AUTOMATED ORDERING. Institutions (Jan)1965 p138.

AUTOMATION - BY PROXY. Club Management (May)1963.

AUTOMEDICS FOOD SERVICE NEEDS NO KITCHEN. Mod Hosp V102(March)1964 p136-138. MEDLARS.

COMPUTER MEAL PLANNING CUTS COSTS. Canad Hosp V43(Dec)1966 p79. MEDLARS.

COMPUTER PROVIDES INSTANT UPDATING OF PERPETUAL INVENTORY AT MISSOURI MEDICAL CENTER. Hospitals V40(April 1)1966 p158-160.

Abstract: A computer-assisted food inventory and cost control program has been established at the University of Missouri Medical Center. The perpetual inventory is as up to date as the latest requisition. Daily and monthly reports on food issues and costs are received. Print out also gives recommended amounts to purchase. (Knickrehm).

Abstract: Describes first phase of long term computer project aimed at cost control in dietary department at University of Missouri Medical Center. Explains coding system and method. Future application will study nutrition values and menu planning. (Abstracts of Hospital Management Studies, June 1967).

COMPUTERS...HOW THEY WORK AT THE DUNES. Resort Management (June)1966 p8-10.

COMPUTERS TODAY: A NEW REALISM. Institution V62(March)1968.

Abstract: The issue features a state of the art report on the use of electronic data planning in the hospitality field. The extent of computer use in the industry (813 establishments surveyed) was 22% in non-commercial operations, 20% in commercial operations; Installing EDP: 9% and 5% respectively; do not use EDP: 69% and 75% respectively. Applications in food service organizations, hotels, hospitals, schools and others are described. The role of service bureaus and evolving information centers and companies are discussed. Pitfalls, planning requirements and the need for early attention by members of the hospitality industry are stressed. References are made to university research projects and educational efforts for students. (Casbergue).

COMPUTER SYSTEM ADOPTED BY HOT SHOPPES SAVES $5,000. Food Executive (Nov)1963 p7-8.

DATA PROCESSING...DO YOU NEED IT? Volume Feeding Management (June)1964 p27-33.

DATA PROCESSING IN THE RESTAURANT. Restaurant Management (July)1963 p18-21.

EDP: WHEN AND HOW TO INSTALL IT. Institutions (Oct)1963 p61-65.

ELECTRONIC PREPARATION CONTROL CUTS FOOD AND LABOR COSTS. Inplant Food Management V11(Feb)1964

FIRST AUTOMATED KITCHEN. Restaurant Management V21(July)1964.

FOOD SERVICE MANAGEMENT BY MACHINES SEEN FOR '70's. Food Service Magazine V28(May)1966 p59-60.

Abstract: A very brief review of food service oriented computer research as presently being conducted by various universities, particularly the Medical Dietetic Program in the College of Medicine, Ohio State University. (Taylor).

IT'S TIME TO GET ACQUAINTED WITH YOUR NEW DIETARY ASSISTANT: THE COMPUTER. Food and Food Serv (Dec)1967.

MEDIAN HOSPITAL MEAL COST IS 90 CENTS -- HAS DATA FROM 504 HOSPITALS. Hospital V39(June)1965 p104-108.

Abstract: Article discusses the function and advantages of HAS (Hospital Administration Services). Special reference given to the structure and potential use of dietary department report comprised of data reported by 504 hospitals during the last six months of 1964. (Abstracts of Hospital Management Studies, June 1, 1966).

MENUS ARE TALLIED WITH SPEED AND ACCURACY BY ELECTRONIC SCOREBOARD. Hospitals V38(May 1) 1964 p68-72. MEDLARS.

METHODOLOGY MANUAL FOR WORK SAMPLING PRODUCTIVITY OF DIETARY PERSONNEL. Institution Management Lab, Dept of Foods and Nutr Univ of Wisconsin, Madison.

NEED FOR STUDYING ADP TECHNIQUES, SHARING COMPUTER PROGRAMS FOR FOOD SERVICE. Hospitals V38 (May 16)1964 p96-97. MEDLARS.

NEW RECIPE FOR COST-CONSCIOUS HOSPITALS. Data Processor V9(July)1966 p14-17.

TAKE THE PENCIL OUT OF YOUR FOOD MANAGER'S HAND. Hospitality (Jan)1966 p54-57.

THE COMPUTER KNOWS ABOUT HOT DOGS. Food Management (Feb)1967.

Abstract: Article describes use of optical scanner (Childrens Medical and Surgical Center, Johns Hopkins, Hospital, Baltimore, Maryland) to read marked menus; IBM 1401 totals patient selection. Patients (including mature five and six years olds) work own menus one day in advance. (Casbergue)

THE NEW DIMENSION IN MANAGEMENT. Institutions V59(Sept)1966 p79-82.

Abstract: The food service/lodging industry is finding the computer economical and efficient. Innovations in equipment, management, and food are forcing acceptance of electronic data processing. (Taylor).

TIME ANALYZED FOR ALTERNATIVE FOOD FLOW SYSTEMS. Hospitals (March 16)1966.

YOU CAN AUTOMATE ALMOST ANYTHING-EXCEPT A FRIENDLY SMILE. Institutions (Jan)1966 p81-84.

WEIGHING TO INVOICING - JUST 10 SECONDS. Food Engin V38(Oct)1966 p38-188.

Abstract: Data processing units at meat-receiving stations reduce shipment information to various forms - printed invoice, magnetic tape, punched card. (Taylor).

WHAT...MAKES AUTOMATED SYSTEMS MORE PRODUCTIVE. Hospitality (Feb)1964 p48-50.

ANDERSON, ALLAN et al. AN ELECTRONIC CASH AND CREDIT SYSTEM. NY Amer Management Assn 1966

ANOFF, I.S COMPUTERS IN FOOD SERVICE EQUIPMENT INDUSTRY. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4.5)1965.

ARPS, MILTON J ALEX'S RESTAURANTS. Hospitality (July)1966 Appleton, Wisconsin.

Extract: "Bar cost can be cut by stopping of spillage and cash shortage through electronic controls. This was emphasized at the Bar and Lounge Merchandising Sessions at the National Restaurant Association Convention in Chicago, 1966. A 4% cut in cost have been achieved in this bar. An electronic computer system rings up and dispense and control the size portion (pre-set) and that it is capable of dispensing all standard drinks and cocktails (30) out of 10 bottles. It will give any drink desired, mixed and match of gin, whiskey, brandy, scotch, vodka and rum to any combination of any dry and/or sweet vermouth or lemon or lime juice. It will make a drink in two seconds."

AVERY, A.C WORK DESIGN AND FOOD SERVICE SYSTEMS. J Amer Diet Assn V51(Aug)1967 p148-153. MEDLARS.

BAKER, G.D DATA PROCESSING WILL MAKE FORECAST OF SEAFOOD CONSUMPTION POSSIBLE. Quick Frozen Foods V29(April)1967 p146-147.

Abstract: The Ocean Garden Products, Inc. is preparing a data processing program which has greatly improved its accounting system and will be used to predict consumption and possibly prices of seafoods in the future.

BALSLEY, M.B COMPUTER IN THE KITCHEN. Hospitals V38(Jan 1)1964 p103-108.

BANGS, O.E WHAT EXACTLY IS PROGRAMMING. Cooking for Profit. (Jan)1964 p32-40.

Extract: "Intelligent programming is a subject of vital importance of each of us. The kind of programming we do in the various departments of our way of life will determine the ultimate success of any specific endeavor." "Programming is the thought processes whereby we evolve and clarify everything we intend to do, whatever the objective. It is the assembling of information to be fed into the greatest of all computers or data processing machines, the human brain. As related to a food service facility, programming is the collecting of thoughts but keeping them loose and flexible; it means narrowing your vision, within broad areas, as to the type of facility you envision and what you hope for it to accomplish. But sensible programming also means keeping your mental plan pliable so that it may change shape as dictated by monetary limitations, locations and numerous other factors which can affect the general concept of what you are trying to do." "Programming means that you have a rough plan and objective to discuss with those other professionals who will play roles in the undertaking."

BARTLETT, DOROTHEA and HITCHCOCK, MARY THE COMPUTER AS A DIETARY TOOL. New Hampshire Diet Assn Bulletin No. 18 (April)1966.

BELL, B.L FOOD ACCEPTANCE AND PREFERENCE RESEARCH: AN ANNOTATED BIBLIOGRAPHY. Pioneering Res Div, Tech Report EPT-5, Army Natick Lab, Mass (July)1965.

BERKMAN, J and MOEHN, C AUTOMATED DIET ORDERING SAVES DOLLARS FOR DIETARY. Mod Hosp V104(Jan)1965 p120-121. MEDLARS.

BERNHARD, RICHARD A COMPUTERS (Part 1). Food Technol (March)1966.

Abstract: A good general article explaining the difference between analog and digital computers and what are the major functions of a digital computer. (Knickrehm).

BERNHARD, RICHARD A COMPUTERS II A COMPUTER LANGUAGE - THE BINARY NUMBER SYSTEM. (Part 2) Food Technol (April)1966.

Abstract: A comprehensive explanation of binary arithmetic is given. It is through the employing of this system that it is possible to communicate with the computer. (Knickrehm).

BERNHARD, RICHARD A COMPUTERS. III. LOGIC CIRCUITS (Part 3). Food Technol (May)1966.

Abstract: Third article in series; includes elementary description of the use of facts and arguments in computer logic. (Ostenso).

BERNHARD, RICHARD A COMPUTERS IV ANALOG COMPUTERS (Part 4). Food Technol (June)1966.

Abstract: The operation of analog computers is explained. Analog computers operate continuously and are useful in such operations as integration. (Knickrehm).

BREWER, JESSIE STUART A PROCEDURAL GUIDE FOR ESTABLISHING AN ELECTRONIC DATA PROCESSING SYSTEM IN A FOOD SERVICE ORGANIZATION. Master's Thesis Oklahoma (May)1967.

BRISBANE, HELEN M and DOUGHERTY, MARY C DATA PROCESSING IN THE VETERANS ADMINISTRATION. The Bulletin V18(Fall)1966 p 1.

BRISBANE, HELEN LINEAR PROGRAMMING FOR DIETETICS. The Bulletin Minn Diet Assn (Spring)1967.

Abstract: A copy of the last part of the talk given at Tri State Meeting in Chicago - May 1966. (Brisbane).

BROWN, MARGARET C (Student in Institution Management, Cornell University) RHOCHREMATICS: A SCIENTIFIC APPROACH TO THE MANAGEMENT OF MATERIAL FLOWS. Unpublished paper. (May 24)1966.

Extract: "The title given to the science of the management of material flows is rhochrematics, a word of Greek derivation: "chrema," products, materials, or things; "rhoe," a flow; the substances, components, subassemblies, and other items used by the factory to put together the finished product. The activities which rhochrematics control include production and inventory control, purchasing, traffic (transportation), materials handing, receiving, and possibly inspection. Since these elements closely intertwine, the essential characteristic required for successful rhochrematics is coordination. A term used synonymously with rhochrematics is materials management." "Howard A. Maxwell describes the use of AMPAC (Automated Material Procurement and Control) in his company's production of heating and air conditioning equipment." "The computer is programmed to calculate detailed forecasts of products to be sold based on historical data and marketing information as furnished by the marketing department." "The computer is programmed to calculate detailed forecasts of products to be sold based on historical data and marketing information as furnished by the marketing department." "The most important report is the Purchased Status report indicating the status of each and every part of the next sixty day working period." "Needless to say, none of these advances have been applied in such a grand form in the dietary department as yet, but the potentiality is great. These methods could be especially useful in the operation of an extremely large operation, greatly reducing the number of employees required and manual clerical labor involved. AMPAC principles could easily be applied to food items procured and received into the institutional kitchen. A mathematical way of determining the most direct route through the kitchen in processing could greatly decrease the cost of handling a menu item which necessitates much preparation for service. Obviously, probability has its merits in the area of forecasting in which, by mathematical analysis of past records of attendance and the influence of any special events which might increase attendance, a prediction can be obtained of the probable amount of business for each day's service. The use of rhochrematics can aid in the myriad of decisions which the dietitian must make (e.g. whether to buy preportioned meats or continue using her older methods). In conclusion, most of the advantages listed earlier in using rhochrematic principles which are aimed mainly toward a large company also apply to the hospital dietary department or commercial kitchen."

BROWN, ROBIN A LOOK TO THE FUTURE. J Assn of Home Sci Alumnae, New Zealand, 1968.

CARNCROSS, R.E EDP WORKS FULL TIME AT MANY LEVELS. Volume Feeding Management (Jan)1966 p50-52.

CARTER, BYRON L ELECTRONIC FOOD COST CONTROL. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

CASBERGUE, JOHN P, KNICKREHM, M and BRISBANE, H COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT - Panel. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

CASBERGUE, JOHN P COMPUTERS AND DIETETICS - WHAT DOES THE FUTURE HOLD. West Va Diet Jour 1966.

CASBERGUE, JOHN P COMPUTERS AND THE FOOD SERVICE INDUSTRY. Hotel Bulletin (Oct)1966.

CASBERGUE, JOHN P COMPUTERS ARE CHANGING METHODS OF MANAGEMENT IN FOOD SERVICE. Food Executive (Jan/Feb)1966.

CASBERGUE, JOHN P COMPUTERS ARE CHANGING METHODS OF MANAGEMENT IN FOOD SERVICE. Australasian Hotel Catering Institute Jour V8(March)1966. (Reprinted from Food Executive (Jan/Feb)1966.

CASBERGUE, JOHN P CONCEPTS FOR THE FUTURE . . . SCHOOL FOOD SERVICE AND THE COMPUTER. School Lunch Jour V21(June)1967 p11-18.

Abstract: Suggestions are presented of opportunities for computer use that appear to be realistic for school food service; menu planning to meet nutritional and cost goals optimally, centralized purchasing, food preparation planning, cost and nutrient data analysis and evaluation, and design simulation. In addition, the characteristics of the computer are explained and the mechanical aspects of a computer setup are described. (Abstract of J Amer Diet Assn, Sept 1967).

CASBERGUE, JOHN P, KELLER, MARTIN, D, SHUGART, GRACE and SMITH, VICTOR E. (Editors). PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT. Medical Dietetic Program, Ohio State University (July 26,27)1965 p24.

Abstract: Computers and Nutrition . . . The Proceedings of the First Conference on Computer Applications in Nutrition and Food Service Management have been published. Sponsored by the Medical Dietetic Program of Ohio State University, Columbus, the July 1965 conference brought together some of the country's leading researchers in computer-assisted menu planning and management. Specific objectives of the meeting concerned the exchange of information on the application of computer technology to menu planning and nutrition, food production management and service, and design simulation of food service systems. Early discussions covered food service systems in a medical environment, but the conference also dealt with computer applications in a variety of food services. These included commercial restaurants, hotels, colleges and universities, military organizations, and other large institutions. There was general agreement among the conferees that the introduction of computers into food service operations during the next decade will come slowly enough so that it will have negligible effect on the work of most dietitians and food service managers. These people will be doing basically the same things they are now doing. But the dietitian will be freed of manual nutritional computations and will have less need to remember specific nutrient composition data. The food service manager will spend less time with the repetitive tasks of purchasing, inventory control, and cost analysis and control. More time can be spent on creative pursuits and on human decision-making. . . J.P. Casbergue et al The Medical Dietetic Program, Ohio State University, Columbus, July 1965 37 pages. . . Order Stock No. PB-170 944 -- PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT from Clearinghouse, U.S. Department of Commerce, Springfield, Va. 22151, price $3.00 (microfiche 65 cents).

CLEVELAND, R.E BOEING'S SUPERMARKET SHOPPING CENTER. Inplant Food Management (March)1963.

CLITHERO, WENDELL A THE COMPUTER AS A DIETETIC TOOL. J Amer Diet Assn V44(Oct)1963.

CLITHERO, WENDELL THE COMPUTER AS A DIETETIC TOOL. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

COFER, H.J MANAGEMENT INFORMATION SYSTEM PROVIDES TIGHTER CONTROL. Food Engin V37(Feb)1965 p49-51.

COLTMAN, M.M SHOULD YOU TRY DATA PROCESSING? Canad Hotel Review and Restaurant (June 15)1964.

CONRADE, GEORGE R A COMPUTER SYSTEMS CONCEPT FOR IMPROVED CONTROL IN HOSPITAL FOOD SERVICE. Michigan State University (June 3)1966.

DEMARCO, M.R, MANN, S.L and MASON, H.A COMPUTER RECIPES IN QUANTITY FOOD PRODUCTION. Hospitals V41(April 16)1967 p88-93. MEDLARS.

DEMARCO, MARY R PLANNING A COMPUTER PROGRAM FOR A FOOD SERVICE DEPARTMENT. Hospitals V42(May 16)1968.

Extract: "The author provides a blueprint for a computer program for a food service department. Her master research plan is based on existing computer systems, and a projection of future systems she explains. The plan encompasses the total food service system and includes subsystems related to information about patients, diet orders, menus, recipes, food order plans, labor work schedules equipment, diet therapy and expenditure control."

DONALDSON, B SYSTEMS ANALYSES IN HOSPITAL DIETARY DEPARTMENTS. Proceedings 4th International Congress of Dietetics (July 12-16)1965 p185-190.

Abstract: Regards dietary departments as production and distribution units where the application of effective management principles and new management techniques can aid in planning and control. Article points out need for research to define standards of quality and production. Describes extended research project at University of Wisconsin relating production time to meals served. (Abstracts of Hospital Management Studies, June 1, 1966).

FELLERS, J.D EDP FOR THE FOOD SERVICE INDUSTRY. Kitchen Planning V4(Second Quarter)1967.

FELLERS, JOHN D THIS SYSTEM WAS DESIGNED FOR COMPUTERS. Mod Hosp V105(Oct)1965 p154-160.

FOSTER, JOHN T CAN DIETARY IMPROVE THE FOOD AND CONTROL THE COST? Mod Hosp V108(June)1967 p104-107.

Abstract: Reports returns of 700 questionnaires of a 1967 food survey of hospitals asking for information on food service systems, food costs, preprocessed and prepackaged foods, management, and wager. (Abstracts of Hospital Management Studies, Dec 1967).

GREEN, ERIC YOU ARE NOT TOO SMALL FOR COMPUTERS. Hospitality (Aug)1966 p68-71.

GREGG, JOSEPH B ATTITUDES TOWARD AUTOMATION. Cooking for Profit (Dec)1966 p13-14,39-41.

GUE, RONALD L THE COMPUTER IN FOOD MANAGEMENT. Prepared for School Lunch Jour (publishing date unknown).

HARRISON, ROGER HELLO, COMPUTER, HERE'S TODAY'S ORDER. Canad Food Jour (Feb)1964.

HARTMAN, JANE AUTOMATION: NEW KEY TO DIETARY EFFICIENCY. Mod Hosp V104(May)1965 p168. MEDLARS.

HOT SHOPPES, INC. AUTOMATION IN THE COMMISSARY. Restaurant Management V21(July)1964.

HOYT, ROBERT S and PRIBOR, HUGO C QUALITY CONTROL SAVES MORE THAN IT COSTS. Mod Hosp V108 (April)1967 p114.

JACOBUS, GILBERT C EXECUTIVE SUPPORT OF INFORMATION AND DATA SYSTEMS ACTIVITIES MUST BE CONSTANT AND MEANINGFUL. Hospitals V41(May 1)1967 p33.

KARWACKI, SISTER MARY DOMINIC PERCEPTIONS HELD BY ADMINISTRATORS AND DIETITIANS IN A SELECTED AREA TOWARD POTENTIAL PATIENT SATISFACTION WITH CERTAIN PHASES OF AUTOMATION IN A HOSPITAL FOOD SERVICE. 48th Annual Meeting, Amer Diet Assn, Cleveland, Ohio (Nov 9)1965.

KEESEE, HAROLD N COMPUTER DIRECTS PROFITABLE DISTRIBUTION. Food Engin (Oct)1965.

KLIER, CONSTANCE MARIE and KNICKREHM, MARIE E A MEASURE OF THE EFFICIENT USE OF THE MAJOR PRODUCTION INPUTS IN A SELECTED SCHOOL LUNCH PROGRAM. Cornell Univ, New York AHEA Inst Mgt Res Report 1966.

KOTSCHEVAR, LENDAL H COMPUTER: FIEND OR FRIEND Part I. Food Management, School and College V3(March)1967 p12,60.

Abstract: Dr. Kotschevar briefly traces the development of the computer from the beginning of time to today's sophisticated machines. He lists eleven different clerical and detail:food service managerial jobs which the computer can perform provided it is fed the proper information. The article is merely a summary of the applications of the computer to the food service industry which are in operation or being developed at this time. (Merrick).

KOTSCHEVAR, LENDAL H COMPUTER: FIEND OR FRIEND? Part II. Food Management School and College V3(April)1967 p10,53-54.

Abstract: Even though menus are now being planned successfully by computer, Dr. Kotschevar pointed out there is still a great deal of information needed before the full potential process and time in specific equipment are lacking. Experts who know the computer are available to work with the food service operators who have the necessary data to establish information requirements so that the computer experts can set up the required system. (Merrick).

KRUGER, DANIEL H AUTOMATION AND MANPOWER. J Amer Diet Assn V43(Sept)1963.

LIFQUIST, ROSALIND C and TATE, E.B PLANNING FOOD FOR INSTITUTIONS. Agricultural Handbook, U.S. Dept of Agriculture No. 16 (Jan)1951.

LOWDER, WILLIAM and MEDILL, CAROLYN PUNCH CARDS SIMPLIFY SELECTIVE MENUS. Mod Hosp (Jan)1958.

MCCRENSKY, H.A COMPUTER POTENTIAL IN DIETARY. Hosp Progress V47(May)1966 p128-136. MEDLARS.

MARTIN, P and FERRELL, S APPLICATIONS OF WORK SAMPLING IN A HOSPITAL CAFETERIA. Hospitals V38,1964 p93-100.

Abstract: Work sampling observations of the activities of 36 cafeteria employees over a 14-day period were tabulated by data processing techniques to provide summaries of the total time by activity during the two-day observation period, the total time spent by each employee by activity, and the total time in each area by hour of day. The findings were used in changing job descriptions and improving efficiency in cafeteria operations. (Abstract Methodology Manual for Work Sampling, Productivity of Dietary Personnel, Dept of Foods and Nutr, Univ of Wisconsin, 1967).

MELLON, GARY and VARNER, DAVID M INSTANT DATA . . . A WAY TO PROFIT. Food Engin (Dec)1967 p59-61.

MEYER, J.C AN INFORMATION SERVICE FOR THE AMERICAN FOOD INDUSTRY. Food Technol (Jan)1963 p32-36.

MILLER, GEORGE T AUTOMATIC RESTAURANT EXPERIMENT SHELVED - BUT TEMPORARILY. Food Executive (June)1964 p12,17.

MILLS, FRANKLIN PUT COMPUTERS TO WORK. Food Engin V38(April)1966 p76-81.

Abstract: Computers can be used to aid in solving numerous problems including those concerning operations and materials planning, production scheduling, production and process control, quality control, and operations research. The use of computers in industry is reviewed. (Taylor).

MONTAG, GERALDINE M OPERATIONS RESEARCH APPROACH TO DECISION-MAKING IN FOOD SERVICE. J Canad Diet Assn V28(Sept)1967 p141-145.

Extract: "Quantitative methods of Operations Research are replacing subjective judgment, rule-of-thumb and intuitive methods of decision-making in the industrial world. Operations Research tools as inventory models, queuing theory, and linear programming are being slanted to the food service industry. These approaches can furnish food service managers with optimum decisions."

MURRAY, MARGARET SUMMARY OF A VISIT TO THE UNIVERSITY OF FLORIDA HOSPITAL FOR THE PURPOSE OF ASSESSING THE USE OF DATA PROCESSING IN A DIETARY OPERATION. Canad Nutr Notes V23(April)1967 p43-45.

NEUMAN, L.I THE DEVELOPMENT OF A SYSTEM FOR COMPUTERIZED INVENTORY AND FOOD COST CONTROL IN THE UNIVERSITY OF IOWA HOSPITALS DIETARY DEPARTMENT. Unpublished Master's Thesis, Dept of Nutrition, Univ of Iowa (June)1967.

PERYAM, DAVID R et al. FOOD PREFERENCE OF MEN IN U.S. ARMED FORCES. Dept of Army, Quartermaster Research and Engineering Command (Jan)1960.

RAUSCH H COMMUNAL KITCHENS IN PLANTS AND HOSPITALS. ZBL Arbeitsmed V16(May)1966 p142-144. MEDLARS.

RIETZ, C and WANDERSTOCK, J.J FOOD FORMULATION AND COOKING. Cornell Hotel and Restaurant Admin Quart V6(Feb)1966 p41-54.

Abstract: The last section of this article on "Recipes and Formulation" describes the factors and steps involved in formulation and defines "recipes" and "formulas". This could be useful in defining specific steps in food preparation procedures as a basis for "computerizing" food production. (Shugart).

RIGBY, ELIZABETH THE COMPUTER--A NEW ASSISTANT IN FOOD-SERVICE MANAGEMENT. Canad Nutr Notes V23(April)1967.

SAGER, JANE FRANCES COMPUTERIZED QUANTITY RECIPE ADJUSTMENT AND CONSOLIDATED FOOD ORDERING FOR A HOSPITAL FOOD SERVICE PRODUCTION SECTION. Master's Thesis, Univ of Wisconsin 1966.

Abstract: The purpose of this research was to develop, for a hospital food service system, a specific computer-assisted method for mechanically compiling and summarizing standardized recipe data necessary for quality and quantity control of food production and to evaluate the feasibility of computerized recipe adjustment (expansion or contraction) and production-section food ordering for regular and modified diets. An actual computer program was written and tested for recipe adjustment and production-section food ordering, using quantity recipes and a model food service situation. The computer programming language used was FORTRAN; the program was tested on a CDC 3600. The computer program model provided a mechanical method for recipe adjustment, including conversion of decimal figures to useable unit sizes; listing of recipe ingredients with amounts needed broken down according to order of handling and/or addition during consolidated regular and modified diet preparation; and a summarized food order of all items needed for the day, excluding ingredients for which a supply request was not necessary (i.e, water). Required input to the program included coded, standardized recipes, census figures, and food-type categories utilizing individual ingredients. (Abstract of Res Inst Management, 1966 B Donaldson, Ph.D. Univ of Wisconsin).

SAYLES, CHARLES I and COMPTON, RICHARD A APPLICATION OF DATA PROCESSING TO FOOD SERVICE Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

SCHUH, D.D, MOORE, A,N and TUTHILL, B.H MEASURING FOOD ACCEPTABILITY BY FREQUENCY RATINGS. J Amer Diet Assn V51(Oct)1967 p340-343. MEDLARS.

SINGER, W.A DEVELOPMENT OF A COMPUTERIZED SYSTEM YIELDING QUANTITY, COST AND NUTRIENT ANALYSIS OF STANDARDIZED RECIPES. Unpublished Master's Thesis Dept of Nutrition, Univ of Iowa (Feb)1968

Abstract: Three outputs were desired; daily recipes in stated production quantities, nutrient analysis per serving, and cost analysis per serving. One hundred recipes were tested for standardization at the fifty portion level. Information necessary for computer utilization of recipe data was determined. The flow chart, systems analysis and tape layouts for the program, as well as the recipe coding system were included. Program language was COBOL. (Author).

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Abstract: Modular simulation provides a systematic method of analyzing modern inventory problems. Better inventory control is thus achieved. (Taylor).

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TAYLOR, CLARICE G UTILIZATION OF DATA PROCESSING IN FOOD SERVICE. Hospitals V39(March 1)1965.

Abstract: Description of system developed at Pennsylvania State University to aid in food service to 79 state institutions. Computerized system compares edible food portions with age and sex, specific dietary requirements and cost allowances. System is correlated to a recipe file. Computer programs are not included. (Abstracts of Hospital Management Studies, June 1966).

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Abstract: This study was undertaken to determine the frequency of planning and the projected time span of planning by dietary departments in procuring the resources of food, labor and equipment. Data were collected by questionnaire and interview from department heads in 16 outstate New York hospitals (69% were 200 - 299 bed in size). Survey indicated the planning practices in use generally reflected replenishment cycle of current operation rather than a control measure for future organizational development. Respondents were generally of departmental planning level and not of the "highest administrative planning level." (Abstracts of Hospital Management Studies Dec 1967).

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CARE: Clinical and Administrative REcord System
Food Service System for Hospitals. IBM Data Processing Application Publication.

Extract: "Food service system applications now operational in some hospitals include selective menu processing, cycle menu planning, and inventory management. Design, programming, and experimental installation of other food service applications--diet order processing, gross requirements planning, invoice processing, and purchasing--are being performed at various other hospitals. This publication shows how all seven applications may be implemented within an integrated system or as individual modules. The user may select any application or set of applications for installation in any sequence. Where an installed application relies on information supplied from an application that is not installed, the user must make such information available. Applications can be installed using any of several machine configurations; programming is facilitated through the use of available library programs and available punched card data decks for data set initialization. Sufficient data is presented to enable a potential user to select those applications of particular interest to him and to benefit from the experience of others who have installed similar applications."

CENTRALIZATION BY COMPUTER. Hosp Nurs Home Food Management (April)1968.

COMPUTER: IMPARTIAL JUDGE OF KITCHEN LAYOUT. Institutions V61(Sept)1967 p119.

Abstract: In food service design, a computer once it "knows" the production sequence can produce a kitchen layout that minimizes the physical movements of employees between various pieces of equipment. A recently developed program by George Conrade, M.S., Michigan State, makes use of the travelchart method for arranging equipment pieces in a food preparation or service area. It is based on the menu items to be produced, production sequence for each item, their frequence of production, and the distance between the pieces of equipment. The input information consists of a program deck and data deck that feeds in the required information for processing the output.

Programs based on Navy recipes for 15 menu items have produced kitchen equipment layouts for salad, vegetable, and meat components. The major sections included for the program are: (a) production frequency and sequence for each menu items (b) movement frequency between each piece of equipment (c) distance matrix for pieces of equipment (d) various equipment arrangements. Comments: This article discussed possibilities with computers in relation to the food service area - possibilities which are not usually mentioned. Most articles dealing with the computer and food service center around inventories, menus, and purchasing. This function for computers should certainly be pursued further. (Taylor and McCann)

COMPUTERIZATION: NEW WAY TO PROFIT. Food Engin V40(March)1968.

COMPUTERS MAY DETERMINE WHAT ARE BEST FOR HOSPITAL USAGE. Quick Frozen Foods V30 (Nov)1967 p259.

Abstract: Two University of Wisconsin researchers have developed a program model to use in computerizing recipe adjustment and food ordering in hospitals. This article attempts to describe all the factors and steps involved in the preparation of the program in a way that the readers of this trade magazine can understand. About all it accomplishes is to create an interest in seeking a report of the original work. (Submitted by M. Merrick).

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Abstract: Dr. Kotschevar predicts that soon the computer may be used to plan kitchens with the right number and kind of equipment, placed in the most favorable location to have the most efficient working situation at the least cost. He bases this prediction on (1) the computer has already been used to indicate the best placement of equipment in a kitchen to accomplish a production job. (2) We do a great deal of planning of our food service layouts by reducing the problem to a mathematical formula. Therefore, if a problem can be solved mathematically, a computer can be used to solve it. (M. Merrick).

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PAPAIOANNOU, A.C and TREARCHIS, G.P CONTROL FOOD PROCESSES WITH DIGITAL COMPUTER? Food Engin V39(Nov)1967 p32. (Taylor).

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SCHMIDT, J THE CASHLESS CAFETERIA. School and College Food Management V3(April)1967 p26.

TAYLOR, C.G FOOD SERVICE AND DIETETICS. Hospitals V41(April 1)1967 p75.

FOOD PRODUCTION

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BAKING BY COMPUTER CONTROL. Food Tech (Nov)1963 p36-41.

CENTRALIZATION BY COMPUTER. Food Management Hosp Nurs Home V4(April)1968 p22-23.

Abstract: In 165 kitchens operated by the Dept of Mental Hygiene throughout the State of New York locally prepared menus will soon trigger a centralized computer program that plans purchasing, guides production, and controls nutritional standards. (Merrick).

COMPUTER IN FOOD SERVICE. Food Management, School and College V4(April)1968 p26-28.

Abstract: This is a report on how computers are making the grade in school and college food service. Blackie Miller & Hines, Inc., food service operators and consultants has installed a total EDP accounting system which has reduced the cost of record keeping by 25 to 60 percent, established rapid and total management controls, and improved public and employee relations. Two automated cashiers in use at The University of Maryland since 1965 have increased the number of trays processed while reducing the number of checkers and cashiers from eight to four cashiers. Pricing errors have been eliminated and the savings have repaid the entire capital cost of the two registers. (Merrick).

DEMARCO, MARY et al. COMPUTER RECIPES IN QUANTITY FOOD PRODUCTION. Hospitals V41(April 16) 1967 p88.

Abstract: At Cleveland Metropolitan General Hospital, data processing has been applied to quantity food production. Research was conducted to develop a recipe format for better "in-put" information to schedule the production of food on a time basis. The goal was to restrict the computer "print-out" to pertinent information to be used by the cooks--the recipe formula in the amounts required and the time of production; as the chronologic time of production would be listed, the food production would be listed, the food production directions that should occur within that time zone would be simultaneously printed. Advance preparation activities, if needed, of food items for the following two days would also be included within the time zones. The resulting four page recipe format is presented. The first page is an information sheet (yield information,procedure directions, pan and batch directions, and service information). Page 2 and 3 are the recipe procedure outline. Page 4 is the recipe formula. Also presented is an example of coordination of food production by computer, using the time factor as basis of computation. (Abstract of J Amer Diet Assn, July, 1967).

JOHNSON, R.A and MOORE, A.N INVENTORY AND COST CONTROL BY COMPUTER. J Amer Diet Assn V49 (Nov)1966 p413.

Abstract: A report of the research conducted at the University of Missouri Hospital to investigate the use of electronic data processing as a technique in inventory and cost controls and to develop a model that could be used by other organizations. (Knickrehm).

LAFORCE, A THE DAY OF THE COMPUTER. Food Management Hosp Nurs Home V2(June)1966 p17-20.

Abstract: The Mound Park Hospital of St. Petersburg, Florida, shaved hours off the time required to prepare food production orders and cut the possibility of error on patients' diets through the use of an IBM computer system. Color coded IBM cards are used for patient food selection. With the computer system special diet lists are now checked in 45 minutes versus four hours manually. One of the prime benefits of this system is that it released dietitians from desk duty so they can do more patient-contact work. Patients receive more individual dietary attention; special food preferences are catered to, and meals are served promptly and with a minimum of error. (Merrick).

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Abstract: In business and government alike the application of information technology poses far-reaching problems and challenges for those who make decisions. The article deals with the effect on our foreign affairs of a readily access to a more vast supply of information. (Hunzicker).

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GRUBINGER, ERIC N HOW WE'LL BE SHARING THE COMPUTER'S TIME. (condensed from Bus Automation, Feb,1967) Management Rev (May)1967.

Abstract: The article discusses the concept of multisubscriber time sharing (MSTS) systems for computers time and "on line" and real time operation. It discusses areas where application will probably be made first as in hospitals, in schools and in finance. It discusses briefly four potential problems, cost, speed, security, and the data base. (Hunzicker).

HAMBURG, MORRIE and ATKINS, ROBERT J COMPUTER MODEL FOR NEW PRODUCT DEMAND. Harvard Bus Rev V45(March-April)1967 p107-115.

Abstract: This is an article on forecasting production of a product. Success or even the survival of a business firm depends on the ability of the company's executives to anticipate the future. A forecasting model can process fast experience in a formal way. Combine this experience with current information in an objective manner and provide quantitative measures to aid executives in making judgments about future levels of important factors affecting sales. This article describes the successful development and use of such a model in a large pharmaceutical company. (Hunzicker).

HARTKEMEIER, HARRY P DATA PROCESSING: HOW TO PROGRAM AND OPERATE PUNCHING, SORTING, ACCOUNTING AND ELECTRONIC STATISTICAL MACHINES. New York, John Wiley and Sons 1966 p399.

HAUSER, W COMPUTERS IN INDUSTRIAL ENGINEERING DESIGN EDUCATION. Indus Engin V18(Jan)1967 p86-89.

HIGGINSON, M.V MANAGING WITH EDP: A LOOK AT THE STATE OF THE ART. Amer Management Assn, New York 1965 p111.

HILL, RICHARD H DESIGN AND DEVELOPMENT OF SOFT WARE PACKAGES. Amer Management Assn, V79,1966 (Hunzicker).

HILL, RICHARD H HOW TO USE OUTSIDE PROGRAMMING SERVICES (condensed from Data Processing Magazine) Management Rev V55(March)1966 (Hunzicker).

HOPPE, RONALD A MEASUREMENT OF ATTITUDES TOWARD AUTOMATION. Personnel Psychol V20(Spring)1967 p1-32.

IRWIN, MANLEY R SOME IMPLICATIONS OF TIME-SHARED COMPUTER SYSTEMS. Quart Rev Econom Bus V7(Spring)1967 p21-29.

KALLIOS, A.E and STEMPEL, J.S THE APPLICATION OF EDP TO THE PURCHASING FUNCTION. Amer Management Assn, Management Bulletin No. 83 1966.

Abstract: Purchasing in many instances has been the last area to make use of EDP. This article discusses why and how EDP can be applied to purchasing, the human element involved, and the selection of equipment. (Hunzicker).

KALLIOS, A.E and STEMPEL, J.S PURCHASING AND EDP. Amer Management Assn, New York 1966 p128.

KELLER, ARNOLD EDP - POWER IN SEARCH OF MANAGEMENT. Bus Automation V13(June)1966 p48-52.

KRANZBERG, MELVIN COMPUTERS: NEW VALUES FOR SOCIETY. Management Rev (Feb)1967.

Abstract: The advent of the computer is producing subtle changes through-out the entire fabric of society. The changes will require new sets of values in relation to human effort. In terms of mechanization, the computer has become a major factor in advancing the industrial revolution. The introduction of computers into education in the form of programmed learning has very significant implications. It is helping us to obtain insights into human cognitive psychology. The computers are speeding and extending the advance of science and technology and will create new lines of production, new and better jobs, new professions, and untold wealth. (Hunzicker).

LANCASTER, KELVIN CHANGE AND INNOVATION IN THE TECHNOLOGY OF CONSUMPTION. Amer Econ Rev, Papers and Proceedings V56(May)1966 p14-23. (Smith, Victor E.)

LANHAM, ELIZABETH EDP IN THE PERSONNEL DEPARTMENT. Personnel V44(March-April)1967 p363-373.

LATHAM, GEORGE DATA PROCESSING NOW. Hotel Bulletin (April)1966 p23-25,27.

LAZARUS, RALPH AUTOMATION'S PERPLEXING BOON: YEARS OF TIME TO SPARE. Personnel (March-April) 1964 p8-15.

MCDONALD, HENRY, S COMMUNICATING WITH THE COMPUTER. HOW SOON CAN WE TALK AS EQUALS. Management Rev (Jan)1968.

Abstract: This article has been condensed from Industrial Research and is a discussion of innovations in further development of the computer which will contribute to a greater usefulness. Theoretically, according to some specialists, computers have no creative limitations. Today development emphasis is on making computer access easier and output more varied, breaking down the man-machine interface by improving conventional inputs like punched cards, tape, and typed instructions and counterpart outputs. Machines that read aloud from printed text are the obvious eventual outgrowth to be expected from some of these computer developments. (Hunzicker).

MACLENNAN, ALEXANDER ELECTRONIC MACHINES. Cornell Hotel and Restaurant Admin Quart V2(Aug) 1961 p3-6.

MANG, DONALD VOICE ANSWER BACK--A CASE HISTORY. Amer Management Assn V79,1966 (Hunzicker).

MEISTER, D and RABIDEAU, G.F HUMAN FACTORS EVALUATION IN SYSTEM DEVELOPMENT. John Wiley & Sons, Inc.

RHEA, J LEARNING A TRADE BY COMPUTER. Electronics V39(Nov 14)1966 p229-231+.

TAYLOR, JAMES W and DEAN, N,J MANAGING TO MANAGE THE COMPUTER. Harvard Bus Rev V44(Sept-Oct) 1966 p98-110.

Abstract: Report of a year-long study of the application of the computer to business operations in 33 companies which have used the computer successfully. Their computer applications were analyzed according to the following classification. Categories: (1) Financial and Administrative (2) Management Planning and Control (3) Market Operations (4) Distribution Operations (5) Factory Operations (6) R and D Engineering. The successful manufacturing companies achieved their success by managing their computer systems in much the same fashion as they control other complex parts of their business. (Hunzicker).

TAYLOR, THAYER THE COMPUTER GOES TO MARKET. Management Rev (Nov)1966 p14-19.

Abstract: This article deals with the use of the computer in full scale market testing, the final evaluation stage preceding national distribution of a product. Market simulation models are used for introducing new equipment. More and more companies are using the computer to improve this batting average in test marketing and new product development. (Hunzicker).

TAUSSIG, JOHN EDP APPLICATIONS FOR THE MANUFACTURING FUNCTION. Amer Management Assn, New York 1966 p55.

TULK, ALLAN INFORMATION SYSTEMS FOR BETTER MANAGEMENT OF MANPOWER RESOURCES. Amer Management Assn V79,1966 (Hunzicker).

WASSERMAN, WILLIAM and NETER, J POTENTIALS IN APPLYING LINEAR PROGRAMMING TO THE CONSUMER PRICE INDEX. Bus Econ Statis Section 1964 p241-248.

WAY, K FREE ENTERPRISE IN DATA COMPILATION. Science V159(Jan 19)1968 p280-282.

WEINBERG, ROBERT IMPROVING CORPORATE PLANNING THROUGH ELECTRONIC DATA PROCESSING. Amer Management Assn V79,1966 (Hunzicker).

WHITMORE, ARTHUR THE STATE OF THE ART AND FUTURE TRENDS. Amer Management Assn 1966.

ZIEGLER, JAMES WHAT IS TIME SHARING. Management Rev (April)1968 p52.

Abstract: This article considers three factors or characteristics identified with computer time sharing. The processing system has the capacity to handle several programs concurrently, permits on-line introduction between user and computer, and provides real-time response. It discusses equipment needs and software trends; software is the greatest difference between time sharing and conventional computer operation. The cost of computer equipment used in time sharing systems is from 50 to 100 percent higher. Care should be taken before initiation of this system. (Hunzicker)

ADDENDUM

EVANS, R.K COMPUTERS RECAST MAN'S ROLE IN MANAGEMENT. Power V111(Oct)1967 p108-109.

GENERAL: EDUCATION; EDUCATIONAL PROGRAMS AND COLLEGE COURSES

ANON

COMPUTER-AIDED INSTRUCTION. Int Sci Tech (Aug)1967 p35-42.

COMPUTERS TO TRACK EDUCATION RESEARCH. Aerospace Tech V21(July 17)1967 p32.

FEEDBACK FOR THE LECTURER. Engin V204(Sept 8)1967 p362.

RESTAURANT MANAGEMENT SIMULATION. Mich State Univ, School of Hotel,Restaurant Inst Management 3rd Edition.

Extract: "This restaurant management simulation is a result of investigations and research conducted by various sources with particular regard to the relationships which exist in the competitive market-place. As such, it falls into the category of Operations Research known as "Game Theory." Game theory is a method for studying the process of decision-making in situations of conflict. It deals with problems in which the individual decision-maker is not in complete control of the factors influencing the outcome." "The essence of a game problem is that it involves individuals with different goals or objectives whose fates are interlocked. Each individual must work out how, not only to maximize his payoff or achieve as much as possible but also to take into account that there are others whose goals are different and whose actions have an effect on all. A decision-maker in a game, then, faces a cross-purposes maximization problem. He must plan for an optimal return, considering the possible actions of his opponents." "The model for this game is based upon statistics gathered in research by professors and students at Michigan State University, the National Restaurant Association, Horwath and Horwath, and Harris-Kerr-Forster. A digital computer is used to speed up the calculations and shorten the time period involved in getting the information to the players." "The object of the game, then is basically to make the proper decisions, based on the information contained in the financial statements and player knowledge, in order to earn a profit for a restaurant. The player can increase your sales only insofar as he can succeed in attracting customers away from his competitors. His profit or gain is at other player's expense or loss. (Conrades).

YOU AND THE COMPUTER. Booklet, General Electric Company 1965.

AUGUSTINE, CLARA L SCHEDULING BY COMPUTER. J Home Econ V59(May)1967 p349.

BENNETT, JOHN M COMPUTERS IN AUSTRALIAN UNIVERSITIES. Datamation (March)1965.

CASBERGUE, JOHN P, KELLER, M.D, SHUGART, G, and SMITH, V.E PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT. Medical Dietetic Program, Ohio State Univ, (July 26-27)1965

UNIVERSITY COURSE, Ohio State University, Medical Dietetics 411 INTRODUCTION TO ELECTRONIC DATA PROCESSING IN DIETETICS.

Overview: This subject of Electronic Data Processing is discussed on a non-technical (non-programming) basis. Readings, movies and lecture-discussions are utilized to develop adequate understanding of the subject to prepare the student for using EDP in his professional courses and activities. Students are given the opportunity to use computer systems in this course for calculation of nutrient-intake data. Subsequent medical dietetic courses will have other application experiences integrated. Instructor: John Casbergue.

DIVISION OF MEDICAL DIETETICS, Ohio State University.

Description: Computer concepts are integrated into all management in dietetics courses and selected patient care oriented courses. Programs have been developed for most food service activities (described in Research - Applications section of this publication) and are presently being converted for remote terminal (IBM 1050) and batch processing modes on the Ohio State University College of Medicine's IBM 360-40. The goal is to provide EDP application experience during appropriate courses throughout the curriculum. Examples: Above described course; food ordering and costing, recipe conversion during Quantity Food Preparation; computer assisted menu planning during Menu Planning etc. Terminal(s) are planned for location in classromms. Revised programs (original programs and documentation limited to batch processing mode on IBM 7094; 1963-1965) and documentation will be made available upon completion to other university educational programs.

UNIVERSITY COURSE (graduate level) Michigan State Univ, School of Hotel, Restaurant Inst Management Instructor: George R. CONRADE.

Extract: "The purpose of this seminar is to consider the design and implementation of various management information systems (MIS) - such as inventory and purchasing, guest reservation and registration, and sales analysis - within hospitality operations, and their implication for management organization, planning and controlling."

COURSE IN DATA PROCESSING. Cornell Hotel Restaurant Admin Quarterly (Feb)1967. Cornell Univ, Ithaca, New York.

Extract: "The School of Hotel Administration at Cornell University offers each semester, during the regular academic year, a three-hour course in data processing. This course deals with the basic principles of automatic data processing, the types of equipment available, and the applications of data processing to hotels and to the food industry." "The students enrolled in the course have the opportunity to work with the system operating in Statler Hall and also to become acquainted with systems operating in large hotels as well as multiple-unit organizations." "During the summer a concentrated two-week course in data processing is given for persons engaged in hotel operation. This course involves the use of IBM unit record equipment adapted to the small hotel and includes system analysis and programming."

COULSON, JOHN E AUTOMATION, ELECTRONIC COMPUTERS, AND EDUCATION. Phi Delta Kappan (March)1966 p340-344.

COURSE (personal communication, B. DONALDSON, March 1968).

Description: Organization and Management of Food Service (3 credits) "Principles of Organization, Personnel Management and Financial Control; layout and design, equipment selection use of work measurement and data processing" Univ of Wisc, Madison, Wisconsin.

EVANS, LLOYD, INGERSOLL, RALPH, and GRIESEN, JAMES V TUTORIAL EVALUATION SYSTEM - A PRESCRIPTIVE APPROACH. Sponsored by the Office of Naval Research through Contract Nonr 4757 (00) with Entelec Inc. Harvard Univ (Feb 13,14)1968.

Abstract: At a recent conference on Computer-Assisted Instruction in Medical Education, James V. Griesen of the Ohio State University College of Medicine spoke on the use of Ohio State's Model Dietary Information System as an aid to the instructional process in professional courses in the Division of Medical Dietetics. Students apply EDP to individual course materials. (author).

GOLDBERG, A.L et al. COMPUTER IN EDUCATION: SOME EXAMPLES. IEEE Proc V54(Dec)1966 p1656-1662.

HARLESS, W.G THE DEVELOPMENT OF COMPUTER-ASSISTED INSTRUCTION PROGRAM IN A MEDICAL CENTER ENVIRONMENT. J Med Edu V42(Feb)1967 p139-145.

HAUSER, W COMPUTERS IN INDUSTRIAL ENGINEERING DESIGN EDUCATION. J Ind Engin V18(Jan)1967 p86-89.

HILL, J.K et al. SELECTING MEDICAL STUDENTS WITH THE AID OF A COMPUTER. J Med Edu V41(Oct) 1966 p947-955.

UNIVERSITY OF ILLINOIS, URBANA, ILLINOIS Dept of Home Econ, Inst Management

Extract: "Expose our students to the use of computers in food service in the following ways: (a) Trip to Univ Computer Lab and talk (b) Talk by IBM representative. (c) Trip to Central Food Stores to observe the use of computers for calculation of inventories and daily food costs for the residence hall complex. (d) Discussion in class." (Hunzicker).

FACILITIES PROGRAMMING, School of Hotel Restaurant and Inst Management, Mich State Univ, HRI 898 Instructor: E.A. KAZARIAN, Ph.D. (Spring)1965.

Description: This is a graduate level course on facilities programming and techniques. It includes such material as basic computer concepts, principles of programming, optimizing, linear programming statistical methods, and others. One section is devoted to programming for diets and menus. (Conrades).

KNICKREHM, MARIE (personal communication, March 5, 1968) SCHOOL OF HOME ECON, Univ of North Carolina.

Extract: "I have included information on computers in my course on Organization and Management as well as having some seminars on the subject for our graduate students."

LOEHWING, DAVID A THE QUALITY OF EDUCATION: SOME NOTES ON THE BUSINESS OF EDUCATION, THE ADVANTAGES OF COMPUTERIZED TEACHING AIDS - AND THE DRAWBACKS. Exchange V28(June)1967 p1-5.

MCDONOUGH, ADRIAN KEYS TO A MANAGEMENT INFORMATION SYSTEM IN YOUR COMPANY. Amer Management Assn V79,1966.

MEALS, DONALD W HEURISTIC MODELS FOR SYSTEMS PLANNING. Phi Delta Kappan V48(Jan)1967 p199-203.

COLLEGE COURSE (graduate level) DECISION OPTIMIZATION IN INST MANAGEMENT. Inst Management Dept., Iowa State Univ, Ames, Iowa 50010 (3 credits) Instructor: G.M. MONTAG, Ph.D.

Description: Use of quantitative methods of operations research and engineering economy to optimize decisions concerning policies, design, and procedures in institution food and housing systems. Quantitative methods such as the use of linear programming in computerized menu planning will be studied.

NELSON, B SCIENTIST AND CITIZEN - ST. LOUIS GROUP BROADENS EDUCATIONAL ROLE. Science V157(Aug 25)1967 p903-907. MEDLARS

RHEA, J LEARNING A TRADE BY COMPUTER. Electronics V39(Nov 14)1966 p229-231.

ROSENBERG, M ATTITUDES OF NURSING STUDENTS TOWARD COMPUTERS. Nurs Outlook V15(July)1967 p44-46.

SCHMIDT, E PROJECT GROW: PRACTICAL COMPUTER-ASSISTED INSTRUCTION. SMPTE Jour V76(Sept)1967 p895-897.

SHEPHERD, WILLIAM G OPERATIONS RESEARCH IN EDUCATION. Management Science (Feb)1965.

SILBERMAN, CHARLES E TECHNOLOGY IS KNOCKING AT THE SCHOOLHOUSE DOOR. Fortune V74(Aug)1966 p120-125.

SILBERMAN, HARRY F USING COMPUTERS IN EDUCATION: SOME PROBLEMS AND SOLUTIONS. Educational Leadership (April)1967 p630-639.

Abstract: An instructional management system is described as an interim step to computer-assisted instruction. The rationale for the instructional management system stems from the consideration of several problems in using computers in education; problems of system development, cost, communication, system ingegration, and user acceptance are considered.

SILVERN, G.M and SILVERN, L.C PROGRAMMED INSTRUCTION AND COMPUTER-ASSISTED INSTRUCTION, AN OVERVIEW. IEEE Proc V54(Dec)1966 p1648-1655.

SPOLSKY, B SOME PROBLEMS OF COMPUTER BASED INSTRUCTION. Behav Sci V11(Nov)1966 p487-496.

THOMAS, T.I.N THESE LONDON STUDENTS HAVEA COMPUTER IN THEIR CLASSROOM. Office Equipment Methodology (Jan)1965.

TROW, WILLIAM CLARK TEACHER TECHNOLOGY: NEW DESIGNS FOR LEARNING. Appleton-Century-Crofts 1963.

WILSON, RALPH D (personal communication, Feb 26, 1968) Director School of Hotel and Restaurant Management, Univ of Denver, Univ Park, Denver, Colorado 80210.

Extract: "We do not have specific computer courses in food service and nutrition, however, starting in September our students will be required to take a 2-hour course in computer programming and a five hour course in computer application. During the application course, problems will be worked out in the area of the students' interest, which may be in the hotel, motel, or food service industry."

ADDENDUM

HART, KATHERINE (Personal communication, April 15, 1968) Chairman, Mich State Univ, East Lansing, Michigan.

Extract: "One section of the basic Junior level Organization and Management Course for Dietetics majors covers computer-based management and applications to nutrition and food service management."

SCHOOL OF ALLIED MEDICAL PROFESSIONS, Ohio State University Alli Med 550 (3) AUTOMATED SYSTEMS IN HEALTH CARE. (Undergraduate and Graduate Credit)

Overview: This course is designed to give students in the allied medical professions an understanding of the basic concepts of automation and computer technology applied to their own and allied health professions. A non-technical approach will be taken to explore the applications of automated equipment to various areas of patient care. Computer programming will not be taught in this course. The evolution of automated equipment will be studied, with special emphasis on the implications for future medical care, patient care systems, and the personnel requirements generated by automated equipment. Whenever possible, students will utilize or view applications of automation processes in each allied health area. Through an interdisciplinary approach, these future members of the health care team will gain not only an awareness of automation in the allied health professions, but also a better understanding of the roles of each professional and the relationships of information between them. It is intended that this course will provide the background and understanding which future allied health professionals will need to effectively use and creatively think and develop automated systems for health care. Instruction will not be technical in nature, but rather, will be devoted to the teaching of basic concepts and applications which will prepare these students to work more effectively in their professional careers, with computer professionals, engineers, and other related personnel. Lectures and discussions led by an interdisciplinary faculty, seminars, demonstrations, laboratory and clinical experience, tours and various audio-visual aids will be utilized in this course. Instructor: John Casbergue and Medical Staff and Faculty.

CASBERGUE, JOHN P, KELLER, MARTIN, D, SHUGART, GRACE and SMITH, VICTOR E. (Editors). PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT. Ohio State University, (July 26,27)1965.

Abstract: Computers and Nutrition. . . The Proceedings of the First Conference on Computer Applications in Nutrition and Food Service Management have been published. Sponsored by the Medical Dietetic Program of Ohio State University, Columbus, the July 1965 conference brought together some of the country's leading researchers in computer-assisted menu planning and management. Specific objectives of the meeting concerned the exchange of information on the application of computer technology to menu planning and nutrition, food production management and service, and design simulation of food service systems. Early discussions covered food service systems in a medical environment, but the conference also dealt with computer applications in a variety of food services. These included commercial restaurants, hotels, colleges and universities, military organizations, and other large institutions. There was general agreement among the conferees that the introduction of computers into food service operations during the next decade will come slowly enough so that it will have negligible effect on the work of most dietitians and food service managers. These people will be doing basically the same things they are now doing. But the dietitian will be freed of manual nutritional computations and will have less need to remember specific nutrient composition data. The food service manager will spend less time with the repetitive tasks of purchasing, inventory control, and cost analysis and control. More time can be spent on creative pursuits and on human decision making. . . J.P. Casbergue et al. The Medical Dietetic Program, Ohio State University, Columbus, July 1965 37 pages...Order Stock No. PB-170 944 -- PROCEEDINGS OF THE FIRST CONFERENCE ON COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT from Clearinghouse, U.S. Dept of Commerce, Springfield, Va. 22151, price $3.00 (microfiche 65 cents).

CONFERENCE ON THE FEASIBILITY OF THE ESTABLISHMENT OF A DIETARY INFORMATION CENTER, Atlanta, Ga. Sept 21, 1965.

Abstract: On September 21, 1965, the Georgia Department of Public Health sponsored a meeting at Atlanta to explore the possibility of establishing a "dietary information center" in Georgia. Attendance included some one hundred dietitians, nutritionists, food service experts, directors of medical research, and data processors representing universities, industry, professional organizations, and local, state, and federal governments. A dietary information center would work to systematize all current food and nutrition information, making it readily available from computer "memories" to professional and private organizations with dietary responsibilities. Information would be available for such operations as menu planning, special diets, food purchasing, and inventory control. Cost of the service would be shared by the public and private agencies using it. If such a center is established, it will be the first of its kind in the world. Guest speakers at the meeting included: Wendell Clithero, International Business Machines Corporation, Chicago; Clarice G. Taylor, Institution Food Research and Services, The Pennsylvania State University, University Park; and Margaret C. Moore, Nutrition Section, Louisiana State Board of Health, New Orleans. (Amer Diet Assn).

AMERICAN MEAT INSTITUTE DATA PROCESSING SEMINAR, (Sept 19-20)1966, The National Provisioner (Oct 8)1966 p122.

Abstract: A review of internal control in data processing as viewed by an accounting professor, an auditing firm, an equipment manufacturer, and a subcommittee of the accounting committee is found in The National Provisioner, Oct 8, 1966 p122.

INTRODUCTION TO EDP AND THE PERSONNEL FUNCTION Management Seminar Bureau of Indus Relations Oct 23-25, 1966 Univ of Michigan, Ann Arbor, Michigan.

Objective: To introduce participants to the fundamentals of EDP and to describe how EDP can be applied to activities carried out by the personnel function. Attendance included fifty-five dietitians, educators, nutritionists, physicians and Systems research personnel representing hospitals, medical schools, universities and the Canadian and United States governments.

FOOD MANAGEMENT SEMINAR, University of Mass (Jan 25,26,27)1967.

Extract: "The impact of scientific development and its effect on management techniques in the commercial and institutional food service business will be the focus of attention at the annual Food Management Seminar." "The three-day series of meetings, panels, discussion sessions, and special features is sponsored by the Massachusetts Food Service Educational Council and the University of Massachusetts." "The seminar program has been developed around the theme "Improved Management Techniques", and will consider scientific developments which provide the industry with more efficient methods but at the same time create new and different management problems." "A major feature will be a consideration of electronic data processing and its applications to the food service industry." (Program).

WORKSHOP-CONFERENCE(S) ON COMPUTER APPLICATIONS TO HOSPITAL DIETETIC INFORMATION July 9-12 and (repeated July 23-26,)1967. Sponsored by Division of Medical Dietetics and Division of Hospital and Medical Facilities, U.S. Public Health Service, Silver Spring, Maryland.

Extract and comments: "Two workshop-conferences on "Computer Applications to Hospital Dietetic Information" to be presented by the Division of Medical Dietetics through the Ohio State University Center for Continuing Medical Education. Included were discussions of basic computer concepts, planning and development of a dietary information system, data requirements and related subjects. Participants will have actual experience in the use of computer systems for processing input data (prepared by participants), obtaining data for food service planning, determining nutrient intake information and utilizing computer assistance for selective and non-selective menu planning." "The conference is planned to give participants opportunity to (1) gain understanding dietary information systems, (2) share their views and thoughts on current dietary applications, and (3) discuss the implications of hospital and dietary information systems for the profession of dietetics. With the changing nature of the health professions, hospital dietetic directors have a need for a critical review of the work accomplished to date and a cogent appraisal of what future work might be most beneficial." (Program).
EDITORS COMMENTS: Fifty-three (dietitians, educators, nutritionists, physicians, systems research personnel) from the United States and Canada attended. The entire Workshop-Conferences were video-taped and have been edited into approximately 13 hours of visual media broken into seven separate "subject area" presentations or discussions. The U.S. Public Health Service has expressed the intention to convert the video tape into multiple copies on 16 mm film. Such films would be available from U.S. Public Health Service to government, professional, educational or other qualified groups. Written proceeding are in process.

COMPUTER APPLICATION OF QUANTITATIVE METHODS IN FOOD SERVICE MANAGEMENT AND DIETETICS.
The Graduate School of Business Admin, Tulane Univ New Orleans, La. (Aug 19-30)1968.

WORKSHOP ON COMPUTER APPLICATION IN FOOD SERVICE MANAGEMENT. Ohio State Univ, Division of Medical Dietetics (June 5)1968.

Abstract: A one day workshop is being held for selected members of Ohio State Restaurant Assn. The objectives of the workshop is to develop an understanding of the basic concepts of computer technology and to explore application in Food Service Management. The as of yet undefined role of a state restaurant association in utilizing Electronic Data Processing will also be explored.

TRENDS IN INSTITUTION MANAGEMENT (3 hours graduate credit) Seminar Dept of Inst Management, Oregon State Univ, Corvallis, Oregon (June 18-28)1968.

THE INFORMATION MACHINE (16 mm and 35 mm film, 10 minutes, color)

Extract: "A sophisticated, amusing account of the development of the electronic computer beginning with primitive man and end with the advent of machine simulation. Colorful and imaginative, this film is an effective communications device for explaining the nature of data processing." (Available through local IBM Corporation Offices).

ADDENDUM

WORKSHOP FOR COMPUTER UTILIZATION IN DIETARY CONTROL, July 14-17, 1968. Sponsored by University of Nebraska, Marie Knickrehm.

GENERAL: FOOD TECHNOLOGY

ANON

COMPUTERS IN PACKAGING. Mod Packaging. V30(May)1966 p216.

Abstract: A computerized system which will automatically calculate packaging requirements is being developed by the Air Force Logistics Command, Wright-Patterson Air Force Base, Ohio (Taylor, Clarice)

DATA COMMUNICATIONS MAY MEAN MORE PROFIT. Food Engin (April)1967.

PACKAGING PACEMAKERS: SCHLITZ. Mod Packaging V39(June)1966 p130.

Abstract: The Schlitz Brewing Company has installed a computer solely for marketing use. The Schlitz ultra-modern package-research program now includes a computerized evaluation of complex consumer-interview variables so that much of the guess work is taken out of early design planning. (Taylor).

KHAN, P and ROSEN, J SYSTEMS FOR INFORMATION RETRIEVAL IN SMALL LABORATORIES. Food Technol V18(June)1964 p846-849.

KORNBLUM, RICHARD D LET IT WORK FOR YOU. Food Engin (Feb)1963 p45-47.

LANCE, PHIL FOUR GOOD REASONS FOR AUTOMATION. Bakers Weekly (Jan 14)1963 p26.

Abstract: Food processing company installs computer system for more accurate and rapid inventory control of every product. Rapidly available or updated reports on production, warehouse data and sales.

MARTEN, J.F AUTOMATIC ANALYSIS IN THE FOOD INDUSTRY. Chem Industr V31(July 13)1965 p1365-1367. MEDLARS.

MELLON, GARY and VARNER, D.M INSTANT DATA...A WAY TO PROFIT. Food Engin V30(Dec)1967 p59.

Abstract: Booth Fisheries, headquarters in Chicago, presently rents an H120 computer system for rapid accessibility in cost accounting for close contact with processing plants throughout North and South America and with distribution and cold storage operations throughout the States. This system maintains current cost figures of fishery products directly from world markets. Complicated cost data which previously took several hours to assemble manually can now be computed in minutes with a minimum of errors. The installation and use of the H120 system as a pilot study is the beginning of a 5 year program to test the computer's strength and weaknesses in cost accounting. If plans go well with the central computer in Chicago, the computer will also control production, maintain inventory records, and control movement of products to warehouses and customers. Possible future uses will be for research and development, sales forecasting, and budget control. (Taylor).

MILLS, FRANKLIN PUT COMPUTERS TO WORK. Food Engin (April)1966.

PAPAIOANNOU, A.C and TREARCHIS, G.P CONTROL FOOD PROCESSES WITH DIGITAL COMPUTER? Food Engin (Nov)1967 p67-71.

PERRY, J.A and ZIEMBA, JOHN V AUTOMATED BATCHING BLENDS VARIETY OF FORMULAS. Food Engin (July)1963 p48-49.

PRATT, G.B APPLICATION OF A SMALL DIGITAL COMPUTER TO RESEARCH AND DEVELOPMENT WORK. Food Technol (April)1964.

READ, R.B CURRENT STATUS OF INSTRUMENTATION IN MILK AND FOOD RESEARCH. Amer J Public Health V53(Oct)1963 p1579-1586.

SWANSON, A.M et al. USE OF STATISTICS AND COMPUTERS IN THE SELECTION OF OPTIMUM FOOD PROCESSING TECHNIQUES. Food Technol V21(Nov)1967 p99-102.

GENERAL: HOSPITAL

ANON

ATOMEDICS FOOD SERVICE NEEDS NO KITCHEN. Mod Hosp V102(March)1964 p136-138.

AUTOMATIC DATA PROCESSING IN HOSPITALS. J Amer Hosp Assn V38(Jan 1)1964.

COMPUTER AIDED PATIENT CARE. Indust Electronics V5(April)1967 p154.

HOSPITAL AUTOMATIC DATA PROCESSING: STATUS AND OUTLOOK. J Amer Hosp Assn (Special Issue).

HOW HOSPITALS AND INDUSTRY WORK TOGETHER. 2. PROTOTYPE PAPER WORK SYSTEM TESTED IN NEW HOSPITAL. Hospitals V39(Dec)1965 p107-109.

MINNESOTA HOSPITALS BEGIN COMPUTER NETWORK. Reconnaissance Newsletter V1(March 7)1966.

Extract: "Eight Institutions Plug Into Central Unit; More to Follow. Over 150 different patient care tasks, from menu planning and lab test reporting to scheduling of services, may be handled through a new cooperative computer system that is expected eventually to serve most big hospitals in Minnesota.

...Initial programs for the eight hospitals now connected to the system will handle accounting and billing; inventory-control and purchasing functions are next on the schedule.

...Cost to the typical member hospital: $2,200 per month, about one-third that of owning EDP equipment; present cost about equals manual process, but when new services are added, the cost per job will decline drastically.

Can You Talk to a Computer? But before this industry can really begin to explore the real possibilities of the computer, executives and managers must learn to work side-by-side with electronic data processing equipment. So says John Casbergue, of Ohio State University, in statements just released by the Society for the Advancement of Food Service Research."

PHS EXPLORES POSSIBILITY OF COMPUTER CLEARINGHOUSE. News article described in J Amer Hosp Assn V41(Nov 1)1967 p121.

PROSPECTS FOR AUTOMATION IN HANDLING PHYSICIAN'S MEDICATION ORDERS. Amer J Hosp Pharm V18 (Sept)1961.

AUSMAN, R.K et al. ADMINISTRATORS STUDY COMPUTER APPLICATIONS IN HOSPITAL SETTING. Hospitals V41(April 16)1967 p44-45.

BARNETT, G.O and HUGHES, J.H BETTER HOSPITAL CARE THROUGH COMPUTER TIME-SHARING. Electronics V39(Jan 24)1966 p93-97.

BARUCH, JORDON J and BARNETT, G.O HOSPITAL COMPUTER PROJECT - MEMORANDUM SIX-A HARDWARE STATUS REPORT. Bolt Beranek and Newman, Inc. Cambridge (Jan 25)1965 p189.

Abstract: Description of the hardward configuration for the hospital computer project undertaken jointly with Massachusetts General Hospital. Equipment used was Digital Equipment Corporation EDP - 1 (modified). Logic of design is explained. Characteristics of basic processor instructions and input-output processor instructions are described in detail. Instructions for arithmetic logic, general loading and operating, and input-output transfer are included. A subsequent report, not yet released, will cover executive routines, user service software, and programmer's utility routines. (Abstracts of Hospital Management Studies, June 1, 1966).

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tested by users are illustrated. They cover medication cycles (ordering, doctor's review, nurse's drug administration list, nurses' drug charting, formulary); laboratory cycle; admissions cycle (bed list, empty bed list, admission interview form) research cycle (describing fields of data from various card or tape sources, matrix construction, various arithmetic, logical, and statistical programs). Programs are designed for teletype input-output. Software data appears elsewhere. Memorandum 6B, forthcoming. (Abstract of Hospital Management Studies, June 1, 1966).

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BELLAMY, C.J COMPUTER BASED HOSPITAL SYSTEMS. Med J Aust V2(Sept 10)1967 p485-487.

BENNETT, WALTER L and HOUCK, JOHN A THREE-STEP PLAN FOR AUTOMATION. Hospitals V41(May 1) 1967 p61.

BIELER, JEROME T EDP'S EXCITING POTENTIAL AS UPGRADER OF HOSPITAL FUNCTIONS. Hospitals V40(May 1)1966 p119-124.

Abstract: General article on the use electronic data processing in hospitals. Examples of the uses of EDP in hospitals and cost of computer system was given. (Knickrehm).

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Abstract: Modern psychiatric hospitals are using computer systems in a variety of ways. Clinical information files and master patient files have been developed. One California hospital reports all data in a case record as a series of events; another hospital can chart changes in patient behavior by its computer system. (Taylor).

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BOWLES, G.C MORE COMPLEX PHARMACY TASKS ACCENT THE COMPUTER POTENTIAL. Mod Hosp V107(Oct) 1966 p146.

Abstract: Article discusses the extension of electronic data processing to pharmacy functions and suggest that pharmacists begin to learn what the computer can do for them. (Knickrehm).

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BRADY, RODNEY H COMPUTERS IN TOP-LEVEL DECISION MAKING: ACCORDING TO A CAREFUL STUDY, THEIR IMPACT HAS BEEN LIMITED UP TO NOW, BUT SHOULD BE FELT MORE STRONGLY OVER THE NEXT DECADE. Harvard Bus Rev V45(July-Aug)1967 p67-76.

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CAHILL, CHARLES A USING THE COMPUTERIZED MMPI. Hosp Community Psychiat V18(Dec)1967 p363.

Abstract: The use of the computerized MMPI has been initiated in a combination of three Wisconsin community health facilities. The MMPI has been incorporated in the role as part of the psychological test battery given to patients. The apparent advantages of the use of the MMPI in mental facilities: (1) It is an additional screening device for individuals who might ordinarily

be interviewed by a sole intake worker. (2) The ready availability of the additional data can frequently assist a busy clinic diagnostician in his case formulations and treatment recommendations. (3) It telescopes the processes of testing, scoring, interpreting, dictating, transcribing, and proof reading. The apparent disadvantages of the use of the MMPI: (1) The intrinsic limitations of the MMPI. (2) A lag of seven to ten days between the testing and receipt of results (3) The tendency of the clinician under pressure of heavy case load to rely too heavily on test results. Even though the stated disadvantages do exist, the use of the MMPI is invaluable in mental health facilities. (Taylor).

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Abstract: Description of the Akron Children's Hospital, Ohio computerized communications and information system. (Abstracts of Hospital Management Studies, June 1, 1966).

COMMISSION FOR ADMINISTRATIVE SERVICES IN HOSPITALS. A QUALITY CONTROL PLAN FOR THE DIETARY DEPARTMENT. Commission for Admin Services in Hosp, 4777 Sunset Blvd, Los Angeles, Calif 90027.

Abstract: Detailed instructions, with samples of appropriate forms, for establishing statistical quality control in hospital food service facilities. Random inspections are recorded by supervisory personnel in two categories, food preparation and service, and housekeeping and sanitation; methods of rating the checksheets used and converting raw data to a quality control index are illustrated. (Abstracts of Hospital Management Studies, June 1, 1966).

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HAYDEN, ADALINE MEDICAL RECORDS. Hosp Management V101(May)1966 p22. (Taylor).

HOPKINS, R.C and WILSON, H.H STATUS AND INTERPRETATION OF THE PATIENT DATA SYSTEM SYNTHESIS. Systems Development Corporation. (Nov)1962.

Abstract: Early non-technical description of the development of a hospital information-handling system. Some emphasis is given to the first two steps of design--analysis of the system and development of system data-handling requirements, which were in process at the time his paper was written. (Abstracts of Hospital Management Studies, June 1, 1966).

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HOYT, ROBERT S and PRIBOR, H.C QUALITY CONTROL SAVES MORE THAN IT COSTS. Mod Hosp V108 (April)1967 p114-121.

INFORMATION SCIENCES ASSOCIATES. AN EVALUATION OF APPROACHES TO INFORMATION PROCESSING FOR METROPOLITAN AREA INDIANAPOLIS HOSPITALS. Part II. A PROPOSAL FOR IMPLEMENTATION PLANNING FOR THE INDIANAPOLIS HOSPITAL DEVELOPMENT ASSOCIATION, INC. & HOSPITAL INFORMATION SYSTEMS PLANNING AND IMPLEMENTATION. Information Sciences Associates. (June-Aug)1965 p90.

Abstract: A report of a two month study conducted in 1965 by Information Science Associates in order to evaluate approaches to processing methods for metropolitan area Indianapolis hospitals. Data processing in each of the ten participating hospitals was reviewed, as well as the requirements of the State Department of Mental Health, Blue Cross, and other related agencies. Hospital Staff and twenty other physicians were interviewed and visits were made to AMA, and Commission on Professional and Hospital Activities. The findings indicate the need for enhanced information processing. To satisfy this need of a comprehensive, shared, centralized data processing system with on line communications between nurses' stations, computer and ancillary services is recommended. Cost is expected to be 40% less than if each hospital had independent service. Other anticipated advantages are conservation of critical systems and programming skills in a single staff, wide range of possible applications, centralized indexing of medical records and critical citizen data, and central storage of community medical statistics. (Abstracts of Hospital Management Studies, June 1, 1966).

Abstract II: Two articles report on problems involved in planning electronic information processing systems and discuss how Information Sciences Associates can counsel hospitals in this area. An explanation of proposed work stages for the Indianapolis Hospital Development Association, Inc. is included covering organization, equipment, site, budget, training, etc. With the report is a chart showing proposed weekly phases of the work schedule. (Abstracts of Hospital Management Studies, June 1, 1966).

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Abstract: Hines Veterans Administration Hospital used the techniques of Operations Research and a computer to develop a system giving greater control of linen utilization. (Knickrehm).

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Abstract: Since data processing is new to hospitals, they need to understand their own problems before they can use a specialist to recommend what it can do for them and how to do it. Because of this, there is a great need for hospital-oriented seminars in all phases of automation. The system designer must remember that hospitals function twenty-four hours a day and there exists a perpetual shortage of properly trained supervisory personnel who can train lower echelons. The proper training of all personnel in depth at stations of document origin is extremely important. The administrator must show that the system has the blessing and support of top management. Plans must include provisions for future growth. Small hospitals may find that they can form their own data centers by standardizing their operations. (Abstract of Data Processing Digest, Nov, 1966).

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PHOMS, E.J DON'T BE AFRAID OF MEDICAL RECORDS ON COMPUTERS. Hosp Management V31(Oct)1966 p31-33.

Abstract: Manchuria Memorial Hospital in Connecticut is using an electronic data processing system in their medical library department. (Taylor).

RAPPOPORT, ARTHUR E, GENNARO, W.D and CONSTANDSE, W.J CYBERNETICS ENTERS THE HOSPITAL LABORATORY. Mod Hosp V108(April)1967 p107.

RIKLI, ARTHUR E, SCOTT, I.A and ALEXANDER, SAMUEL N STUDY SUGGESTS VALUE OF SHARED COMPUTERS. Mod Hosp V106(May)1966 p100.

Abstract: A survey of eight hospitals with computer projects having remote data input and output capability from one or more service areas. The survey covers such characteristics as the basic equipment available, application, and programming system. Equipment difficulties, shortage of skilled personnel and financial limitations have impeded development in computer systems application. More studies and experimentation with equipment and techniques are essential for growth in the application of computers to improve hospital patient care. (Knickrehm)

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SILER, WILLIAM and KORN, H A WORKING TOTAL INFORMATION SYSTEM IS AT LEAST A YEAR AWAY. Hospitals V41(May 1)1967 p99.

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SORIANO, A COMPARISON OF TWO SCHEDULING SYSTEMS. Operations Res V14(May-June)1966 p388-397.

Abstract: The delays that outpatients have to undergo before getting their medical treatment are often excessively long. The most commonly used patterns of scheduling appointments to patients are classified into three categories: (1) Pure Block Appointment systems, (2) Individual Appointment systems, and (3) Mixed-Block Individual Appointment systems. Several analytical studies have been concerned with the comparison of some of these appointment systems, and their highlights are described briefly. There are many other possible ways of assigning appointments to patients; one such way, referred to as the Two-at-a-Time Appointment System, is defined. The advantages of the Two-at-a-Time Appointment System over any of the commonly used ones are discussed. Finally, the steady-state waiting time distribution functions that will correspond to the Two-at-a-Time Appointment System and the Individual Appointment System, as applied to the

Wilmer Outpatient Clinic, have been obtained and are compared. (Ostenso).

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Abstract: Three hospitals in Wilmington, Delaware share a computer to facilitate administrative data processing. Each of the hospitals uses the equipment in a slightly different fashion. In addition to regular billing work, the computer is used for weekly and monthly reports. (Knickrehm).

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YOST, HELEN T SHARED COMPUTERS. Hospitals V40(May 1)1966 p36.

Abstract: Bibliography on the use of shared computers by hospitals. (Knickrehm).

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ZINSSER, H.H ELECTRONIC FUTURE OF MEDICAL FACILITIES. Ann NY Acad Sci V118(Sept 17)1964 p3-5.

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Extract: "It contains only a general outline of the functions which can be handled by a computer center and which, subject to further evaluation, are deemed to be such that they can be included in the system advantageously." "Positions on jobs now conventional in Hotel Operation which will be modified by application of data processing in a computer center. All of the functions will be performed and generally in greater detail and in more useful form but they will be done to a greater extent by machine instead of people."

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Abstract: A computer system for handling reservations, confirmations, dining room chargers, and guest bills. (Shugart).

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HOTEL OF TOMORROW. Innkeeping (June)1964 p44-48.

IBM'S RAMAC PLAYS KEY ROLE FOR HOLIDAY INNS. Hotel/Motor Hotel Monthly (Jan)1963 p27.

INSTALLATION OF "ELECTRONIC PACKAGE" PROVIDES ROOM STATUS CONTROL SYSTEM. Hospitality (June) 1963 p42-43.

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BECK, ROBERT A AUTOMATION FOR HOTELS-STAGE 1. Cornell Hotel and Restaurant Admin Quart V3(Aug) 1962.

BECK, R.A, SAYLES, C.I, MACLENNAN, H A STUDY OF CENTRAL ON-LINE DATA PROCESSING FOR A GROUP OF HOTELS. Cornell Univ, Unpublished report. (March 10)1964.

Description and Extract: A study undertaken by Cornell and the IBM Corporation to examine the potential value of a centralized data processing system to serve the hotel industry of New York City. This study follows that of IBM (described in Cornell Quarterly, August, 1962). "The systems considerations for both the Central Computer and the In-Hotel equipment are based on name hotels totalling 12,217 rooms and 11 hotels totalling 14,817 rooms"..."The savings as shown in the report arethe result of a Cornell University Survey, and in no way represent a statement as to guaranteed savings, but rather are estimated potentials"..."The report is written for both hotel operators and technical people involved in system solution, consequently little interest to hotel men." (Sayles)

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BIRDSELL, J.F MANAGEMENT OF TREADWAY INNS IS EXPEDITED BY CENTRALIZED DATA PROCESSING. Cornell Hotel and Restaurant Admin Quart V71(Feb)1967 p127-134.

Abstract: A description of Datapro Corporation, established as a subsidiary of Treadway Inns to handle data processing for 28 affiliated inns. (Shugart).

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MACLENNAN, H, ALEXANDER, and SAYLES, C.I A NEW HOTEL MANAGEMENT SYSTEM BASED UPON DATA PROCESSING IN A COMPUTER CENTER. Research Section, School of Hotel Admin, Cornell Univ (Jan 25) 1966.

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McCARTHY, ROBERT GUEST-LEDGER AUTOMATION FOR A SMALL HOTEL. Cornell Hotel and Restaurant Admin Quart V3(Aug)1962 p63-68.

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SAYLES, C.I and MACLENNAN, H.A A NEW HOTEL MANAGEMENT SYSTEM BASED UPON DATA PROCESSING IN A COMPUTER CENTER. Unpublished report, Cornell Univ (April 20)1965 (rev).

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SAYLES, C.I DATA PROCESSING FOR THE SMALL HOTEL. Cornell Hotel and Restaurant Admin Quart (June)1963 p3-5.

SAYLES, C.I and COMPTON, R.A DATA PROCESSING FOR A SMALL HOTEL USING IBM EQUIPMENT, A MANUAL. Cornell Hotel and Restaurant Admin Quart V6(Feb)1966 p61.

Abstract: A manual, available also as a reprint, includes explanations of equipment and forms suitable for front office accounting for a small hotel. Although not necessarily applicable to food service, it does show the development of a system and illustrations of equipment used. (Shugart).

SAYLES, C.I DATA PROCESSING--FRONT OFFICE ACCOUNTING FOR THE SMALL HOTEL USING IBM EQUIPMENT. Cornell Hotel and Restaurant Admin Quart V5(Nov)1964.

SAYLES, C.I FOOD - CONTROL: A PRELIMINARY EFFORT. Unpublished report, School of Hotel Admin, Cornell Univ (March 5)1963.

SAYLES, C.I and MACLENNAN, H.A FRONT OFFICE ACCOUNTING FOR THE SMALL HOTEL USING IBM EQUIPMENT. Cornell Univ, Second Edition, 1965.

SAYLES, C.I NEW EQUIPMENT EXPEDITURES. Cornell Hotel and Restaurant Admin Quart, Data Processing (Feb)1967.

Extract: "Hotel managerial control through data processing can be greatly expedited by use of proper terminal equipment on the hotel premises. This equipment must be capable of operating some distance away from the computer, be able to produce information speedily.....all devices (should) be readily obtainable on the open market and not be costly special designs. A six week demonstration held at Cornell included: Teletypewriters and card readers (Western Union); Model 311 printer and tape reader (SCM); a MIMO (permits direct inquiry to the computer at information centers, such as the telephone switchboard) (Date Trends, Inc.), a small printer (MITE Manufacturing Co.) Equipment costs should be about 1.00-1.50 per room (hotel monthly.)"

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Aust Commonwealth Dept Health Food Nutr V24 p36 (No. 3 and 4).

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Abstract: The American Medical Association has recommended to National Heart Institute a study of 40,000 to 100,00 men for five years, to find out whether premature coronary artery disease can be prevented by diet. A study with 2,400 men aged 45 to 54 years has been carried out for two years as a feasibility trial for the larger investigation. The investigators in the feasibility study pointed out: (1) The incidence and mortality in coronary heart disease is extremely high in the U.S.; (2) There is overwhelming evidence that the incidence of this disease is strongly associated with serum cholesterol level; (3) The serum cholesterol level can be safely lowered by modification of the usual American diet in ways that are acceptable to large numbers of people. This study may cost $50 million. (Nutrition Notes, Dec, 1967).

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Extract: "Recognizing the need for international food standards, the Food and Agriculture Organization and the World Health Organization in 1962 jointly sponsored the formation of a 'Codex Alimentarius Commission,' charged with the development of such standards. The Codex Alimentarius will be designed to 'insure adequate protection of the interests of consumer and producer alike.' The standards which the Codex will contain will not only facilitate international trade in foodstuffs, but will also serve as models for national legislation in developing countries."

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Amer J Clin Nutr V19(July)1966 p17.

Abstract: Because analysis of the riboflavin content of biological fluids and tissues with existing methods has been hampered by interfering substances and technical difficulties, these investigators propose the use of a ciliate protozoan for such assays and present their results with this method is assessing the riboflavin status in man and animals.

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Abstract: Metabolic Mixture and Water Balance. The determination of the metabolic mixture, i.e, the proportion of protein, fat, and carbohydrate being metabolized, and the water balance has in the past required a lengthy systematic assessment of the many input and output factors. This has unfortunately tended to dissuade investigators from its routine application. The authors give a brief historical description of the development of the metabolic mixture and water balance equations. A general description of Fortran programming for computer is presented and specific programs are discussed. (J Amer Diet Assn, Feb, 1968).

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Extract and Description: The Eleventh Annual Report presents progress associated with the nutrition component of cardiovascular disease research studies for the period July 1, 1966 to June 30, 1967. The report again includes details of several computer programs as well as the progress reports of projects. "Describes the progress of the nutrition component of cardiovascular disease research studies during the period of July 1, 1964 to June 30, 1965. Included also are nutrition reports from some selected studies which are not primarily cardiovascular in nature, but which have somewhat similar problems in methodology. It is expected that this report will not only be of interest to those planning new studies, but will provide a basis for exchange of information and for discussion of mutual problems among the investigators, nutritionists and other staff members of studies now in progress." EDITORS COMMENT: This is an annual internal report of the Heart Disease Control Program, U.S. Public Health Service. Additional data or references included in these reports have not all been included in this bibliography.

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All of the data was coded and computed according to standard food composition tables obtained on data cards from U.S. Dept of Agriculture. The format for calculation was based on pilot study information which determined the maximum column need on the data card. The total sample of children included in the study was approximately 3000. (Author).

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Abstract: The latest and tenth report of the Joint FAO/WHO Expert Committee on Food Additives is concerned with the toxicologic evaluation of fatty emulsifiers, steroid emulsifiers, natural stabilizers, and stabilizers made by modifying natural materials, as well as a number of miscellaneous food additives. Certain substances discussed in previous reports are also re-evaluated. Acceptable daily intakes of emulsifiers, stabilizers, miscellaneous food additives, and some food colors are summarized in three "annexes," while another annex explains the procedure used in arriving at specifications and toxicologic evaluations, as well as the functions of and relationships between the Joint FAO/WHO Codex Alimentarius Commission and the Expert Committee on Food Additives." (J Amer Diet Assn, March 1968).

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Abstract: This publication explains the calculation of the nutritive values for home-prepared foods listed in Agriculture Handbook No. 8, "Composition of Foods--Raw, Processed, Prepared," as revised in 1963. The formulas for these home-prepared foods, the table of vitamin retentions, the examples of calculations, and other information contained in the publication will be helpful to dietitians and others who use Handbook 8. The information will be especially useful to research dietitians who need to calculate the nutritive value of home-prepared foods that contain ingredients different in kind or proportion from those used in the Handbook. The term "formula" refers to the kinds and amounts of ingredients used in calculating the nutritive values of home-prepared foods. The report was prepared under the supervision of Dr. Bernice K. Watt, Research leader for the development of tables of food composition. (Wenberg).

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Abstract: Part II, Burns, Patrick D, Program testing, personnel requirements, and a review of results. Condensed from Cost and Management (V40,No.4) published by the Society of Industrial and Cost Accountants of Canada. This article discusses the development of the program testing, the qualifications, training, and work of the supervisors and the reappraisal of the system. (Hunzicker).

MACHINE PROCESSING OF WORK SAMPLING DATA. Community Syst Foundation (Aug 6)1963.

Abstract: Report concerns method of reducing time and cost of processing work sampling data and details method of taking data and mark-sensing them on IBM cards. Cards are machine sorted and totaled with some final manual computation required. Procedure results in net savings of 250 man hours over old manual method requiring 300 hours. Observation sheet included in appendix used to take work sampling data. (Abstracts of Hospital Management Studies, June 1, 1966).

PRODUCTIVITY OF HOSPITAL DIETARY PERSONNEL: WORK SAMPLING METHODOLOGY.
Institution Management Lab, Univ of Wisconsin (Bulletin) Manuscript completed (Aug 31)1965.

AUGUSTINE, CLARA L SCHEDULING BY COMPUTER. J Amer Home Econ V59(May)1967 p349-352.

Abstract: This study considers four procedural steps that are basic to the development of all automated scheduling programs. Scheduling of students for required observations in the Child Development laboratory at Michigan State University was used for the study, but the principles involved could conceivably be applied to similar problems in food service management. (Shugart).

BARTSCHT, K.G et al. MAN-MINUTE COMPUTATION FORM THE BASIS FOR NEW STAFFING METHODOLOGY.
Hospitals (March 16)1966.

BARTSCHT, K.G and ROTHENBUHLER, E METHODOLOGY FOR DETERMINING DIETARY STAFFING IN HOSPITALS.
J Amer Diet Assn (July)1965.

BARTSCHT, K.G et al. PHARMACY STAFFING METHODOLOGY--A MANAGEMENT TOOL. Amer J Hosp Pharm
V22(Oct)1965.

BARTSCHT, K.G et al. RANGE OF REQUIRED SKILLS DETAILED IN STUDY OF THE PHARMACY FUNCTION.
Hospitals (March 16)1966.

BARTSCHT, K.G WORK MEASUREMENT. Hosp Accounting (Jan 1)1966.

BLOETJES, M.K A STUDY OF DIETETIC TRAINING: I. CURRENT STAFFING PRACTICES. J Amer Diet Assn
V39(July)1961.

BONINI, K, MALOCH, F, and HARGER, V DIETARY STAFFING PATTERN BASED ON ANALYSIS OF EMPLOYEES' WORK TIME. Hospitals V41(Aug)1967 p92-98.

Abstract: Elementary study of productive, nonproductive and personal times among dietary workers is used to adjust staffing patterns. Discussion of absenteeism rates and their impact on revised staffing patterns. (Abstracts of Hospital Management Studies, Dec, 1967).

BUESCHCAL, R.T EDP AND PERSONNEL. Amer Management Bulletin, Management Bulletin No. 86 p5-16.

Abstract: A discussion of the personnel department's application of data processing to the following areas usually made in the order listed. Compensation Including frings benefits and wages and salary analyses. Skills Inventories - Internal talent available to fill openings within the firm. Labor Relations, Employment, Limited use of data processing is made in training, testing, medical records and motivation planning. The interaction of the personnel department with other departments will expand. A broader business background will be the prerequisite of the personnel manager of tomorrow. (Hunzicker).

CASSIDY, C.E.J ELECTRONIC DATA PROCESSING AND THE PERSONNEL FUNCTION: THE PRESENT AND THE FUTURE. Personnel Jour V45(June)1966 p352-354.

Abstract: Are personnel men beginning to appreciate the value of EDP for their own use? This survey indicates an awakening on the part of many personnel directors to the facts of electronic life. But dollar-justification for its use will be necessary. (Hunzicker).

CATLIFF, G.C USE OF COMPUTERS IN HOSPITAL PLANNING. Brit Hosp J Soc Serv Rev (March 19)1965 p504-505.

Abstract: Description of network analysis for planning, scheduling, and revising activities. Discussion of computer costs and application to evaluation of circulation routes and room sizes. (Abstract of Hospital Management Studies, June 1, 1966).

CONNOR, R.J et al. EFFECTIVE USE OF NURSING RESOURCES: A RESEARCH REPORT. Hospitals V35(May 1) 1961.

DEARDEN, J COMPUTERS: NO IMPACT ON DIVISIONAL CONTROL. Harv Bus Rev V45(Jan-Feb)1967 p99-104.

Abstract: In this article the author examines the validity of the prediction that computers and the new information technology will cause a recentralization of authority. He also examines the potential of the computer to improve the ability of top management to control profit-center activity, and speculates on the changes that are likely to occur within the individual profit center as a result of development in computers and related technology. (Hunzicker).

DECKER, H.M and NEILSON, H.R THE FACTORS AFFECTING WOMEN IN ADMINISTRATIVE POSITIONS. J Canad Diet Assn p19-22.

DEMARCO, J.P AUTOMATING NURSING'S PAPER WORK. Amer J Nurs V65(Sept)1965.

DEMARCO, J.P and SNAVELY, S.A NURSE STAFFING WITH A DATA PROCESSING SYSTEM. Amer J Nurs V63(Oct)1963.

ESTABROOK, L.C PRODUCT COST CONTROL REPORTING SYSTEM. J Indus Engineering V17,1966 p520-524.

Abstract: A product cost control system is described which provides first line supervision daily with information needed for control of direct labor, direct material, indirect material and supplies, maintenance and engineering costs, all by work centers. Weekly listings show product costs summarized for the week, for the last month and cumulative orders to date. Other reports are prepared on request which show current cost status versus target cost. Visual display boards at the work centers and in the management chart room present selective items of information in chart form. All extensions and tabulations are made by computer after the data are originally entered into the system. (Ostenso).

FISHER, BONNIE DYNAMIC TRAINING PROGRAM AIMS AT REDUCING TURNOVER. Hospitals V41(Nov 16)1967 p89-93.

Extract: "The author describes a formalized, continuous training program that develops good employees at a rate fast enough to cope with the rapid turnover of unskilled workers. A variety of teaching formats is used and electronic data processing eases the record keeping, the author relates."

GREEG, J.B ATTITUDES TOWARD AUTOMATION. Cooking for Profit (Dec)1966 p13.

HAMMOND, L IBM CARD-PUNCH TRAINING FOR PATIENTS. Hosp Community Psychiat V17(March)1966 p73.

Abstract: Patients who do not mind unvarying routine and who work best in a highly structured situation are being taught IBM card punching at the Hudson River State Hospital. (Taylor.)

HARWOOD, VELMA INDOCTRINATION, ORIENTATION, AND TRAINING PROGRAMS IN RELATION TO LABOR TURNOVER IN SELECTED HOSPITAL DIETARY DEPARTMENTS. 49th Annual Meeting, Amer Diet Assn, Boston 1966.

HAWLEY, J.A and ROGERS, E.J APPLICATIONS OF EDP TO PERSONNEL ADMINISTRATION. Cornell Hotel Restaurant Admin Quart (Nov)1963 p79-82.

KENT, J.W and OSTENSO, G.L PRODUCTIVITY RELATIONSHIPS OF HOSPITAL DIETARY DEPARTMENTS. J Amer Diet Assn V47(Aug)1965.

KUSHNER, A PEOPLE AND COMPUTERS. Personnel (Jan-Feb)1963 p27-34.

LANHAM, E SOME QUESTIONS AND ANSWERS ABOUT ELECTRONIC DATA PROCESSING SYSTEMS FOR PERSONNEL RECORDS. Pers Jour V46(June)1967 p347-349.

Extract: "Sooner or later the personnel administrator faces the need for overcoming the limitations of the manual keeping of personnel records. EDP is the best available answer. It poses problems. Here are some answers--together with a very excellent guide for the frustrated personnel administrator who is considering conversion to EDP."

MORGAN, PHILIP L AUTOMATIC DATA PROCESSING OF PERSONNEL DATA. Pers Jour V45(Oct)1966 p553-557.

Extract: "Carefully controlled, the computer provides the personnel manager with an excellent tool--one that can free his people from much drudgery. But this sophisticated system is not an end in itself. Its purpose is the accomplishment of the personnel function more efficiently and productively, and the extension of its service to the rest of the organization."

ROTHENBUHLER, E.F and BARTSCHT, K.G DETERMINING DIETARY STAFF IN HOSPITALS--METHODOLOGY. J Amer Diet Assn V47(July)1965 p25-28.

Abstract: Discusses methods developed "for determining and forecasting hospital personnel requirements based on demand factors which actually create staff needs..." (Abstracts of Hospital Management Studies, March, 1966).

SHERMAN, R COMPUTER SYSTEM CLEARS UP ERRORS, LETS NURSES GET BACK TO NURSING. Hosp Top V43(Oct)1965 p44-46.

WILLIAMS, JUNE A PERFORMANCE AND COST EVALUATION PROGRAM FOR A HOSPITAL DIETARY DEPARTMENT. 49th Annual Meeting, Amer Diet Assn 1966.

SYSTEMS PLANNING

DONALDSON, B SYSTEMS ANALYSES IN HOSPITAL DIETARY DEPARTMENTS. Proc 4th Internat Congress Diet. (July 12-16)1965 p185-190.

Abstract: Regards dietary departments as production and distribution units where the application of effective management principles and new management techniques can aid in planning and control. Article points out need for research to define standards of quality and production. Describes extended research project at University of Wisconsin relating production time to meals served. (Abstracts of Hospital Management Studies, June, 1966).

FLAGLE, C.D OPERATIONS RESEARCH IN THE HEALTH SERVICES. Operations Res V10(Sept-Oct)1962 p591-603.

FLAGLE, C.D and YOUNG, JOHN P APPLICATION OF OPERATIONS RESEARCH AND INDUSTRIAL ENGINEERING TO PROBLEMS OF HEALTH SERVICES, HOSPITALS AND PUBLIC HEALTH. J Indus Engineering V17(Nov)1966 p609-614.

Abstract: This is a brief review of the use of Operations Research and Industrial Engineering to solve problems of health services in hospitals and public health agencies. Some of these problems include allocation of physical resources, allocation of nursing care, utilization of facilities, and creating an effective communication system. (Ostenso).

GUE, R.L OPERATIONS RESEARCH IN HEALTH AND HOSPITAL ADMINISTRATION. Hosp Admin V10(Fall)1965 p6-22.

HERTZ, DAVID B DEVELOPING A COMPUTERIZED MANAGEMENT INFORMATION SYSTEM. Management Rev (April)1966 p61-64.

HOWELL, JAMES T SETTING GOALS FOR AN AUTOMATED INFORMATION SYSTEM. Hospitals V40(May 16)1966 p75.

Abstract: Identifying areas of responsibility, defining the elements in each area and establishing the goals are the initial steps in implementing an electronic data processing system. Patient care can be improved through computerized medical records; as well as improved basis for management decisions. (Knickrehm).

KELLY, THOMAS T and NOLAN, JOHN R THE EDP FEASIBILITY STUDY: COVERS THE BROAD STEPS THAT MUST BE TAKEN. Management Serv V1(July-Aug)1964 p48-54.

NOTARO, MICHAEL WHAT TO ASK AND EXPECT OF EDP SERVICE BUREAUS. Management Rev (condensed from Admin Management, Jan 1967).

Abstract: Selecting a data processing service bureau for your company involves many decisions which can only be made after three basic questions are answered. (1) Should your company use a service bureau at all or should it buy and operate its own EDP system? (2) What are the relative costs and services of a bureau in comparison with an in-house system? (3) If you decide to use a service bureau, how do you select the right one? The article suggests 5 points to consider in selecting a service bureau. (Hunzicker).

ADDENDUM

SCHUSSEL, GEORGE WORKLOAD BALANCING AND INVENTORY MINIMIZATION FOR JOB SHOPS. J Indus Engin V19,1968 p194-202.

Abstract: A specific algorithm is described which provides a procedure for combining economic analysis and workload forecasts into an efficient economical schedule for a job shop. (Ostenso).

KONNERSMAN, PAUL M AN INFORMATION SYSTEM FOR THE CONTROL OF LOGISTICS IN HOSPITAL DEPARTMENTS OF DIETETICS. Unpublished Master's Thesis, Mass. Inst of Technology, June, 1968.

TALKS AND PAPERS - PUBLISHED AND UNPUBLISHED

ANOFF, I.S COMPUTERS IN FOOD SERVICE EQUIPMENT INDUSTRY. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

ANDREWS, JANET INVENTORY AND COST CONTROL. Workshop-Conferences on Computer Applications to Hospital Dietetic Information, Ohio State University (July 23-26)1967.

ANDREWS, JANET T, MOORE, AIMEE, N DEVELOPMENT OF A FOOD COST ACCOUNTING SYSTEM USING ELECTRONIC DATA PROCESSING. Amer Diet Assn, 49th Annual Meeting (Oct 26)1967.

ANDREWS, JANET APPLICATIONS OF DATA PROCESSING TO FOOD SERVICE OPERATIONS. North Carolina State Diet Assn Meeting, Charlotte, N.C. (April 19)1968.

AVERY, ARTHUR C CHANGING KITCHENS WITH CHANGING TIMES. Amer Diet Assn, 49th Annual Meeting, Boston, Mass. 1966.

BALINTFY, JOSEPH L THE MENU PROBLEM. CORS-ORSA 1964 Joint Conference, Montreal, Canada (May 26-29)1964.

BALINTFY, J.L MEAL PLANNING WITH COMPUTER ASSISTANCE. Engin Summer Conferences, Univ of Mich Ann Arbor (June 24)1965.

BALINTFY, J.L and PREKOPA, A SIMULATION OF BASIS STABILITY IN STOCHASTIC LINEAR PROGRAMS. Paper Presented at the SIGMAP Workshop Princeton (Dec 5)1965.

BALINTFY, JOSEPH L and LOVACS, LASZLO B THE SEPARATION SCHEDULING PROBLEM. Presented at the 30th National Meeting of the O.R.S.A. Durham (Oct 17)1966.

BALINTFY, J.L and GUE, RONALD L GOALS, FINDING AND IMPLICATIONS OF COMPUTER ASSISTED MENU PLANNING. Workshop-Conferences on Computer Applications to Hospital Dietetic Information, Ohio State Univ (July 9-12 and 23-26)1967.

Abstract: Dr. Gue presented the mathematical foundations and considerations of computer assisted menu planning. Dr. Balintfy followed with a demonstration and discussion of selective menu planning by on-line teleprocessing on the Tulane University computer system. (Casbergue).

BALINTFY, JOSEPH L COMPUTER APPLICATION IN DIET THERAPY. Presented at the SYMPOSIUM ON THERAPEUTIC NUTRITION. Univ of Calif, Davis (Dec 4)1967.

BARUCH, J.J HOSPITAL INFORMATIONS SYSTEMS -- IMPLICATIONS FOR PATIENT MEDICAL AND DIETETIC CARE. Workshop-Conference on Computer Applications to Hospital Dietetic Information, Ohio State Univ (July 9-12)1967.

BEACH, BETTY L and OSTENSO, G.L SYNTHESIS OF NORMAL ENTREE SERVICE TIME: RELATIONSHIP OF SERVICE TIME TO SYSTEM CAPACITY. Amer Diet Assn, 50th Annual Meeting, Chicago 1967.

Abstract: The purpose of this research was to determine the feasibility of using predetermined time standards in establishing normal entree service items. Two methods, Methods-Time Measurement (MTM) and stop-watch time study, were used to determine normal performance times for serving entrees in a cafeteria. A computer simulation model was developed to analyze the effect of the service times on the movement of customers through a cafeteria line. Four serving elements were synthesized using MTM and six entree serving cycle groups based on the element time values were established. For the entree serving cycle groups developed, the sum of the MTM mean element performance times composing each serving cycle were equivalent to the mean stop-watch time for all items in each group; therefore, MTM data can be used as an accurate estimate of entree performance time. Method of serving was the major factor influencing variation of service times among entrees. Analyses of individual entree service times were made. Computer simulation revealed a direct relationship between total number of customers served in a cafeteria system and various combinations of entree service times. The method developed in this research to derive serving cycle times could be utilized by food service methods and procedures. Normal service times for individual menu items could provide management with a tool for evaluating present serving methods and predetermining the optimum combination of menu items and service times in relation to customer service time and effective utilization of personnel. (Author).

BOEBER, ANITA P PROJECTIONS TOWARD AUTOMATED HOSPITAL INFORMATION SYSTEMS - THE DIETETIC'S ROLE. Calif Diet Assn, Los Angeles (May)1966.

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BREWER, CAPTAIN JESSIE S A PROCEDURAL GUIDE FOR ESTABLISHING AN ELECTRONIC DATA PROCESSING SYSTEM IN A FOOD SERVICE ORGANIZATION. Amer Diet Assn, 49th Annual Meeting, Boston, Mass 1966.

BRISBANE, HELEN COMPUTER PROGRAMMING IN THE HOSPITAL FOOD SERVICE. 6th Annual Diet Admin Course Dept of Army (May 7)1966.

BRISBANE, HELEN M LINEAR PROGRAMMING FOR DIETETICS. Conference on Computer Uses In Menu Planning. U.S. Army Natick Laboratories, Natick Mass (April 4,5)1967.

BRISBANE, HELEN M DATA PROCESSING RELATED TO HOSPITAL DIETETICS. Oklahoma Diet Assn Meeting (April 20)1967.

BROWN, ROBIN M TOWARD A TOTAL COMPUTER-BASED SYSTEM OF MANAGEMENT IN HOSPITAL FOOD SERVICE. Amer Diet Assn Annual Convention, Chicago, Illinois (Aug 18)1967.

Abstract: The dietary service of Shands Teaching Hospital and Clinics is concerned with developing and establishing relationships among major functions of a hospital dietary system. Such functions are menu planning, recipe development, inventory control, purchasing, production, etc. A dietary system exists to produce quality food that meets nutritional and cost criteria and satisfies its patrons. Within each defined function optimal operating procedures are developed to benefit the total system. The system may be controlled with conventional methods of management (i.e. all aspects performed by people); or it may be monitored or controlled by utilizing techniques of electronic data processing. The current research project concerns exploration. Research activity is presently in the area of developing computer programs that will plan satisfactorily selective menus for regular and 46 modified diets. These selective menus are planned by computer within nutritional and cost specifications, with consideration for population preferences and aesthetic aspects. A menu activates other functions of a dietary system. Recipe content of a menu creates the need for food item specification, purchasing procedures, and inventory control. The menu also activates food production involving scheduling of manpower and equipment, as well as quality control through standardized recipes, and definition of tasks within the production function. Patient selection and patient census information are necessary for later decision-making processing within the dietary system. This research project is developing computer control of these functions, and will implement them into the dietary system. Eventually it is hoped to demonstrate practicality of computer-based management in hospital dietary systems on at least a regional basis. (Author).

BROWN, ROBIN DIETARY ALLOWANCES AND NUTRIENT DATA IN HOSPITAL MENU PLANNING. Monograph (Oct)1967.

BROWN, R CYBERNETICS IN MENU PLANNING AND NUTRITION IN HOSPITALS AND COMMUNITY. Florida State Board of Health Div of Nutr Staff Conference, Gainesville, Florida (March 8)1968.

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BROWN, ROBIN USES OF STANDARDIZED RECIPES. Catholic Hosp Assn Inst of Food Service Supervisors (April 23)1968.

CARTER, BYRON L ELECTRONIC FOOD COST CONTROL. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

CASBERGUE, JOHN P FOOD SERVICE MANAGEMENT - A NEW ERA. Ohio State Restaurant Assn, Columbus, Ohio (Sept 14)1965.

CASBERGUE, JOHN P, KNICKREHM, MARIE and BRISBANE, HELEN COMPUTER APPLICATIONS IN NUTRITION AND FOOD SERVICE MANAGEMENT - PANEL. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

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CASBERGUE, JOHN P THE IMPLICATIONS OF THE COMPUTER IN FOOD SERVICE MANAGEMENT. Institutional Food Service Manufacturers Assn, Chicago, Illinois (Nov 17)1965.

CASBERGUE, JOHN P COMPUTERS AND THE IMPACT ON OUR INDUSTRY. International Society of Restaurant Assn Executives, Chicago, Illinois (May 21)1966.

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CASBERGUE, JOHN P THE COMPUTER - BOON OR BUST. Food Service Executives Assn, St. Louis, Mo. (Aug 16)1966.

CASBERGUE, JOHN P WHAT CAN THE COMPUTER DO FOR SCHOOL LUNCH. Amer School Food Service Assn Pre-Convention Seminar Pittsburgh, Pa. (Oct 13-15)1966.

CASBERGUE, JOHN P COMPUTERS AND DIETETICS - A NEW ERA. Amer Diet Assn, 49th Annual Meeting (Oct 28)1966. Boston, Mass.

Abstract: The uses and benefits of the computer and other forms of automation have often been demonstrated and described by those in business, management, medicine, government, and manufacturing over the past fifteen years. Yet the application of computer technology to one of the oldest and largest industries in our culture - food service - is in the earliest stages of infancy. The use of the computer as a dietary tool has been generally limited in other than applications research, to processing of historical information such as nutritional-survey data or accounting (cost or nutrient), food-selection information and others. Research undertaken in the last five years has shown applications such as: (1) computer assisted menu planning (2) food purchasing, production and service planning (3) nutrition information processing (4) design simulation. All have a vital role to play in the dietary systems, not only in the future, but in those of today. Research in the areas of dietetics and medicine, drug-food toxity relationships, labor scheduling, altering of food composition by additives for specific nutritive goals and others, offer challenges the dietitian must consider in the immediate future. The dietitian cannot make the assumption that others will complete all the required research and that perfected systems will be made available to be "plugged in" when administration gives the word. Methods of processing dietary information have been developed and the basic data requirements identified for most current dietary activities. The systems planning and data collection are the most important, and most difficult portions preceding the implementation of any or all parts of a system. But, the dietitian and nutritionist with appropriate guidance, assistance, and effort, can effectively utilize the computer as a tool to release them for the myriad of highly repetitive tasks that require little creative thinking but must be done. It is these tasks, which steal countless years of productive time from the professional that must be automated as soon as possible. Dietetics is at a crossroads. Creative thought and positive effort will open up entirely new dimensions for the profession. (Author).

CASBERGUE, JOHN P THE USE OF COMPUTERS IN FOOD MANAGEMENT AND SOME PLANNING REQUIREMENTS. Institutional Executives Seminar, Columbus, Ohio (Dec 14)1966.

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CASBERGUE, JOHN P THE COMPUTER - A DIETARY TOOL. Alabama Diet Assn, Birmingham, Alabama (April 8)1967.

CASBERGUE, JOHN P MANAGEMENT INFORMATION SYSTEM: SHOP TALK. National Restaurant Assn, Convention and Educational Exposition, Chicago, Illinois (May 24)1967.

Abstract: A two hour panel discussion was held exploring the use of Electronic Data Processing for the development of management information systems in the hospitality field. Panel participants included: Henry Barbour, Michigan State University, Moderator; Mr. R.T. Ashman, Holiday Inns; John Casbergue, Ohio State University, Cliff Castle, IBM Corp; George Conrad, Michigan State University; Stephen Hall, Sheraton Design and Development, Inc.

CASBERGUE, JOHN P THE ROLE OF EDUCATION FOR THE PROFESSIONAL AND NON-PROFESSIONAL IN PLANNING THE USE OF ELECTRONIC DATA PROCESSING. Workshop-Conferences on Computer Applications to Hospital Dietetic Information, Ohio State University (July 9-12 and 23-26)1967.

CASBERGUE, JOHN P, GRIESEN, JAMES V BASIC CONCEPTS OF ELECTRONIC DATA PROCESSING. Ohio State Univ, Workshop-Conferences on Computer Applications to Hospital Dietetic Information (July 9-12 and 23-26)1967.

CASBERGUE, JOHN P COMPUTER APPLICATIONS TO PATIENT DIETETIC CARE. Ohio State University Workshop-Conferences on Computer Applications to Hospital Dietetic Information. (July 9-12 and 23-26)1967.

CASBERGUE, JOHN P CREATING THE FUTURE: PRESPECTIVES ON HEALTH PROFESSIONALS AND COMPUTERS. Amer Hosp Assn, Chicago, Illinois (Aug 23)1967.

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CASBERGUE, JOHN P THE DIETITIAN AND THE COMPUTER OR WHAT DO I DO NOW? Michigan Dietetic Assn, Detroit Michigan (April 26)1968.

CHRISTAKIS, GEORGE NORTHEAST REGIONAL CONFERENCE ON NUTRITION EDUCATION. New Haven, Conn. (May)1967.

Extract: "The role of a computer will continue to expand in the practice of hospital and public health dietetics. In addition to computer-regulated activities already in operation in the not too distant future computers will take a 24-hour recall diet history on hospital and clinic patients. They will identify the nutritional deficiencies in the diet pattern that can be corrected by either nutrition education or therapy. (Reported in NUTRITION PROGRAM NEWS Nov-Dec 1967).

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CLITHERO, WENDELL A COMPUTERS CAN TELL WHAT TO PUT ON THE MENU. Wisc Diet Assn, Milwaukee, Wisc (April 20,21)1967. Internat Bus Machines Corp, Chicago.

COLTRIN, SALLY and SCHAEFER, TIMOTHY DATA PROCESSING AND RECIPE STANDARDIZATION. Wisc Diet Assn (Printed in the Wisconsin Dietitian) V3(Fall)1966.

Extract: "Description of programs developed to compute ingredient amounts for 650 recipes." "Desired recipe yields were established and computer calculated amounts of each ingredient for each yield. Three programs were written "The first program performs the compilations and stores the answers on a reel of magnetic tape. The second program sorts the item into the correct order and also stores the reel of tape. The third program takes the information off of the tape and prints the recipes in their final form." "Dietitians, chefs and cooks will certainly spend less time doing clerical type work of adjusting and writing recipes. Having a complete file of standardized recipes will also provide us with a sound basis for food cost control." (Casbergue).

COOK, NEVIS, E FDA'S ROLE IN CONTROLLING TOXIC FOOD CONTAMINANTS. 49th Annual Meeting, Amer Diet Assn, Boston, Mass (Oct 26)1966.

CUMMINS, A.B DELEGATE TO THE COMPUTER: WHAT, HOW? Amer Diet Assn, 48th Annual Meeting, Cleveland, Ohio (Nov 3)1965.

DODGE, OUINDARA, OLIVER EDP-DIETETIC SYSTEMS AND THE NEW COMMUNICATIONS TECHNOLOGY. Amer Diet Assn, 49th Annual Meeting, Boston, Mass. (Oct 28)1966.

ECKSTEIN, ELEANOR FOLEY and TERRELL, MARGARET E MENU PLANNING BY COMPUTER: THE RANDOM APPROACH. Amer Diet Assn, 50th Annual Meeting, Chicago, Illinois 1967.

Abstract: Menu planning problems are increasing in significance as raw food costs, labor costs and demands for high quality food at low cost by sophisticated consumers increase. Pressures for efficient operation cause dietitians to direct a major portion of time and effort to active supervision rather than to tasks requiring routine decisions such as menu planning. Computer simulation can be used to rapidly evaluate a large number of parameters simultaneously in a manner analagous to that used by the dietitian. Under control of the computer program developed, the computer prints the dinner menu with the first randomly selected item that meets pre-determined criteria such as cost, color, texture, shape, acceptability and frequency intervals. The computer first selects the meat item, then the starchy food, then the vegetable, etc. If no item can be selected that will meet the criteria due to limited choices available, an asterisk is printed and the computer goes on to select remaining meal components using "dummy characteristics" for the omitted item. "Management by exception" is a reality as the dietitian need only select items in unusual cases. In addition to printing the menus, code numbers for all items in the preceding three week period are printed; for the convenience of the dietitian in making substitutions. A deck of cards is punched automatically so that subsequent sets of menus can be built on the current set. The program developed indicates the feasibility of the random method in selecting dinner menu items and suggests a direction for further research. (Author).

ECKSTEIN, ELEANOR (Kansas State Univ) MENU PLANNING BY COMPUTER: THE RANDOM APPROACH. Presented at Indiana Diet Assn Meeting, Indianapolis Indiana (April 17)1968.

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Abstract: At a recent conference on Computer-Assisted Instruction in Medical Education, James V. Griesen of the Ohio State University College of Medicine spoke on the use of Ohio State's Model Dietary Information System as an aid to the instructional process in professional courses in the Division of Medical Dietetics. Students apply EDP to individual course materials. (Author).

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FELLERS, J.D WHAT, WHERE, WHEN, AND HOW CAN AUTOMATION PAY OFF IN FOOD SERVICE. Food Serv Industry at Univ of Missouri (March 29)1966.

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FELLERS, J.D and GUE, RONALD L DON'T DISPUTE IT--COMPUTER IT. Seminar to Southeastern School Lunch Supervisor, Atlanta, Georgia (March 14)1967.

FELLERS, J.D FUTURE OF FOOD SERVICE (& COMPUTERS). South Central Florida Hosp Conference to Administrators, Orlando, Florida (March 16)1967.

FELLERS, J.D EDP IN MANAGEMENT CONTROL OF DIETARY DEPARTMENTS. Southeastern Hosp Conference of Dietitians at Miami Beach, Florida (May)1967.

FELLERS, J.D and BROWN, ROBIN USE OF COMPUTERS IN THE DEPARTMENT OF DIETETICS. Amer Hosp Assn Inst of Dietary Dept Admin, Atlanta, Georgia (Oct 12)1967.

FELLERS, J.D CYBERNETICS IN NUTRITIONAL EDUCATIVE PHILOSOPHY. Florida State Board of Health, Div of Nutr Staff Conference, Gainesville, Florida (March 8)1968.

FELLERS, JOHN D, ROBBINS, RALPH and BROWN, ROBIN CYBERNETICS SYSTEMS. Florida State Board of Health, Div of Nutr Staff Conference, Gainesville, Florida (March 8)1968.

GOLDBLITH, SAMUEL A SOME POSSIBLE FOOD APPLICATIONS IN IONIZING AND NON-IONIZING RADIATIONS. Amer Diet Assn, 49th Annual Meeting (Oct 26)1966.

GOTSCHALL, G.G EDP COMPUTATION OF THE MASTER MENU FROM THE AIR FORCE ANNUAL FOOD PLAN. Conference on Computer Uses in Menu Planning, U.S. Army Natick Laboratories, Natick, Mass. (April 4,5)1967.

GUE, R.L and BALINTFY, JOSEPH L GOALS, FINDINGS AND IMPLICATIONS OF COMPUTER ASSISTED MENU PLANNING. Workshop-Conference on Computer Applications to Hospital Dietetic Information, Ohio State University (July 9-12 and 23-26)1967.

GUE, RONALD SELECTIVE MENU PLANNING BY COMPUTER. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

HANLON, TIMOTHY E BASIC CONCEPTS AND PRINCIPLES OF ELECTRONIC DATA PROCESSING. Amer Diet Assn, 49th Annual Meeting, Boston, Mass (Oct 28)1966.

HARWOOD, VELMA E INDOCTRINATION, ORIENTATION, AND TRAINING PROGRAMS IN RELATION TO LABOR TURNOVER IN SELECTED HOSPITAL DIETARY DEPARTMENTS. Amer Diet Assn, 49th Annual Meeting, Boston, Mass 1966.

HAYTON, MAJOR MARION J STANDARDIZATION OF INTERNATIONAL RECIPES FOR MEDICAL FOOD SERVICE. Amer Diet Assn, 49th Annual Meeting, Boston, Mass 1966.

HEINEMEYER, JANE M LABOR UTILIZATION AND COST: CENTRAL HANDLING vs. CONVENTIONAL METHOD. Amer Diet Assn, 49th Annual Meeting, Boston, Mass 1966.

JOHNSON, RUTH A INVENTORY CONTROL BY ELECTRONIC DATA PROCESSING. Amer Diet Assn, 48th Annual Meeting, Cleveland, Ohio (Nov 4)1965.

KINDIG, FRED E WAGES AND SALARY ADMINISTRATION - A PHILOSOPHY OF MANAGEMENT. Amer Diet Assn, 49th Annual Meeting, Boston, Mass (Oct 28)1966.

KNICKREHM, MARIE E SIMULATION - WHAT CAN IT DO FOR YOU? Kansas Diet Assn, Manhattan, Kansas (May 5)1966.

KNOWLES, JOHN H TODAY'S CHANGING CONCEPTS OF THE HOSPITAL. 49th Annual Meeting, Amer Diet Assn Boston, Mass 1966.

KRUGER, DANIEL H THE CHANGING SOCIO-ECONOMIC STRUCTURE AND IMPLICATIONS FOR THE DIETITIAN. Amer Diet Assn, 49th Annual Meeting (Oct 25)1966.

LIPSCOMB, MARY ARE YOU READY FOR ELECTRONIC DATA PROCESSING? Ohio Diet Assn Meeting, Dayton, Ohio (May 13)1966.

LIPSCOMB, MARY ARMY MEDICAL SPECIALIST CORPS, THE MUST HOSPITAL FOOD SERVICE FACILITY. Amer Diet Assn, 50th Annual Meeting, Chicago, Illinois 1967.

LOEBER, ANITA P Chief, Management Analysis Staff VA Center PROJECTIONS TOWARD AUTOMATED HOSPITAL INFORMATION SYSTEMS - THE DIETETICS ROLE. Los Angeles, Calif, Calif Diet Assn (May 12)1966.

MANCHESTER, COLONEL K.E, SAGER, JANE F APPLICATIONS OF DATA PROCESSING TO FOOD SERVICE OPERATIONS Institution Management Meeting, Charlotte, North Carolina (April)1968.

MOORE, MARGARET C AN APPEAL FOR A MECHANISM FOR COLLECTING CURRENT AND VALID NUTRIENT INFORMATION Presented at the Conference on the Feasibility of the Establishment of a Dietary Information Center. Atlanta, Georgia (Sept 21)1965.

OSTENSO, GRACE ARE WE READY FOR DATA PROCESSING? Kansas Diet Assn, Manhattan, Kansas (May 5)1966.

OSTENSO, GRACE LAUDON OPERATIONS RESEARCH IN FOOD SERVICE MANAGEMENT. Amer Diet Assn, 49th Annual Meeting, Boston, Mass 1966.

Abstract: A food service system is an elaborate input-output system in which management acts as a feedback loop, measuring deviations of outputs from expectations and adjusting inputs, operations, or expectations to restore control. The input resources into the food service system are essentially materials, i.e., food and supplies; human skill; and equipment. Capital and time are the operational resources which influence the availability and utilization of the input resources. The outputs of the system are the end products and services, i.e., total meals desired and customer satisfaction. Increased demands for the operational resources of the total organization, i.e., hospital, school, etc, are leading to greater competition for dollars and forcing priorities. If food service systems expect to remain in a competitive position with other departments within the organization, food service management must move from simple reliance on intuition to the more powerful quantitative analysis of problems. If decision-making is to be upgraded by the thoughtful consideration of alternatives, objectives which serve the effective continuance of the organization must be carefully defined, alternative strategies identified, measures of effectiveness established, uncertainties recognized, and costs and benefits analyzed. Quantitative methods may play a major role in developing basic food system production and operation data necessary for managerial decision. (Amer Diet Assn: Session New Concepts for Food Management Operations).

PASLEY, RUTH (Oregon State Univ) EXPERIENCES IN DATA PROCESSING. Presented at Joint Convention of the Wash Home Economics Assn and Wash State Dietetic Assn (April 18)1968.

PITTMAN, ADELLE COREY NUTRIENT EVALUATIONS -- NEW AND SHORT METHODS OF CALCULATION. 47th Annual Meeting, Amer Diet Assn Portland, Oregon.

QUAM, MARY E DEVELOPMENT OF A COMPARISON SYSTEM FOR USE OF READY-PREPARED AND CONVENTIONALLY PREPARED FOODS IN QUANTITY FOOD PRODUCTION. Amer Diet Assn, 49th Annual Meeting 1966.

ROWAN, T.C REMOTE COMPUTER USAGE: IMPLICATIONS FOR EDUCATION. Presented at the 1964 TIMS-ORSA Joint Nat Meeting (Sept)1964.

SAGER, JANE F THE ARMY HOSPITAL FOOD SERVICE DATA PROCESSING SYSTEM. Conference on Computer Uses in Menu Planning U.S. Army Natick Laboratories, Natick, Mass (April 4,5)1967.

SAGER, JANE F and OSTENSO, GRACE L COMPUTERIZED QUANTITY RECIPE ADJUSTMENT AND CONSOLIDATED FOOD ORDERING FOR A HOSPITAL FOOD SERVICE PRODUCTION SECTION. Amer Diet Assn, 50th Annual Meeting, Chicago, Illinois 1967.

Abstract: The purpose of this research was to develop, for a hospital food service system, a specific computer-assisted method for compiling and summarizing standardized recipe data necessary for quality and quantity control of food production; and to evaluate the feasibility of computerized recipe adjustment (expansion or contraction) and production-section food ordering for regular and modified diets. The computer program developed provided a computerized method of recipe ingredients with amounts broken down according to order of handling and/or addition during consolidated regular and modified diet preparation; and a summarized food order of all items needed for the day. Required input to the program included coded standardized recipes, census figures, and regular and modified diets utilizing individual ingredients. Research results indicated the compiling and summarizing of standardized recipe data necessary for quality and quantity control of food production within a hospital food service by computer-assisted methods were possible. The computerized method provided accurate information, at a speed far exceeding that of human capability. Utilization of the computerized method developed in this research would require refinement and adaptation corresponding to procedures and output requirements of each specific food system, and to the type and capacity of computer available. (Author).

SAGER, JANE F and MANCHESTER, K.E APPLICATIONS OF DATA PROCESSING TO FOOD SERVICE OPERATION. Institution Management Meeting, Charlotte, North Carolina (April)1968.

SAYLES, CHARLES I and COMPTON, RICHARD A APPLICATION OF DATA PROCESSING TO FOOD SERVICE. Papers in PROCEEDINGS OF THE 13th CONFERENCE OF THE SOCIETY FOR THE ADVANCEMENT OF FOOD SERVICE RESEARCH. Cornell Univ, Ithaca, New York (Oct 4,5)1965.

SAYLES, CHARLES DEVELOPMENTS FOR HOTELS AND INSTITUTIONS. Conference on Computer Uses in Menu Planning. U.S. Army Natick Laboratories, Natick, Mass (April 4,5)1967.

SEARING, O.L (personal communication April 11, 1968) State Supervisor, School Food Services Raleigh, North Carolina.

Extract: "In Atlanta, Georgia, on March 14, 1967 at the Austin Hansen Associates Seminar, we discussed our computer developments to a group of local level school food service directors. This would be of the school district with many schools. We also discussed the subject with the state directors at the Post Dallas Convention of the American School Food Service Association at Fort Worth, Texas, on August 4, 1967, and at Vail, Colorado, on December 7, 1967, at the first annual seminar of school administrators of the Association of School Business Officials and representatives of school food services." "We are most anxious to work with others in the development of appropriate systems for school food services. Anything which we have done thus far we would be most anxious to share with anyone and if additional materials, actual examples from the field, are needed, we would be most happy to supply them."

SHREVE, DARRELL PROGRAMMING AND DATA PROCESSING. Mississippi Diet Assn, Jackson, Miss. (April)1966.

SMITH, VICTOR E LINEAR PROGRAMMING AND THE ATTACK ON MALNUTRITION. Paris Colloquium on the Possibilities of Operation Research in the Developing Countries, Paris, France (June 28)1963.

SMITH, VICTOR E AN ECONOMIC MEASUREMENT OF THE NUTRITIONAL EFFICIENCY OF FOOD. Econometric Soc Copenhagen, Denmark (July 12)1963.

SMITH, VICTOR E AN APPROACH TO THE ECONOMICS OF NUTRITION IN NIGERIA. U.S. Agency for Internat Development, Washington, D.C. (Dec 15)1966.

SMITH, VICTOR E AN ECONOMIC APPROACH TO THE STUDY OF AGRICULTURAL PRODUCTION AND NUTRITION IN NIGERIA. Univ of Ibadan, Ibadan, Nigeria (Feb 8)1967.

SMITH, VICTOR E NUTRITIONAL REQUIREMENTS FOR USE IN DIET SELECTION BY LINEAR PROGRAMMING. Health Congress of the Soc of Health Nigeria, Zaria, Northern Nigeria. (March 31)1967.

SMITH, VICTOR E HUMAN NUTRITION AND RESOURCE UTILIZATION RELATIONSHIPS IN NIGERIA. U.S. Agency for Internat Development Lagos, Nigeria (Sept 26)1967.

STACY, REGINALD THE FINANCIAL ADMINISTRATION OF THE BRITISH HOSPITAL SERVICE. Amer Assn of Hosp Accountant Annual Inst (June 16)1964.

Abstract: Speech delivered to the Annual Institute of the American Association of Hospital Accountants in 1964. It briefly discusses the organization of the hospitals owned by the Ministry of Health of the United Kingdom and presents a limited amount of cost data converted to U.S. dollars. Included in the document is a summary of the building plans of the Ministry for approximately a ten-year period. Financial budgeting and revenue allocations are also discussed. (Abstracts of Hospital Management Studies, March 1966).

TAYLOR, CLARICE G THE USE OF PUNCHED CARD DATA PROCESSING TO PLAN AND CONTROL FOOD USAGE AND COST 46th Annual Meeting of the Amer Diet Assn (Oct 18)1963.

TAYLOR, CLARICE G AUTOMATION AND NEW DEVELOPMENTS IN FOOD PRODUCTION AND PROCESSING. Amer Diet Assn Portland, Oregon (July 28)1964.

TOMPKINS, R.K, BURKE, LINDA, ZOLLINGER, R.M and CORNWELL, D.G ELEVATION OF PHOSPHOLIPID CONCENTRATIONS IN HUMAN BILE BY FEEDING LECITHIN. Federation of Amer Societies for Experimental Biology Shelburne Hotel, Atlantic City, New Jersey (April 19)1968.

Abstract (related to EDP function): A model dietary information system was utilized to calculate the approximate nutritional intake in patients for research purposes. Nutrient data (including calories, carbohydrate, protein, fat and calcium) were obtained for each meal the total day, and a weekly average. Percentage composition of the diet supplied by carbohydrate, protein, and fat was similarly determined. Nutritional intake information on patients both preoperatively and post-cholecystectomy was utilized for research concerning the effect of feeding lecithin on phosphilipid concentrations in human bile. Results will be reported in Federation Proceeding of the American Societies for Experimental Biology, 1968. (L. Burke, Division of Medical Dietetics, Ohio State University).

TUTHILL, BYRDINE INVENTORY AND COST CONTROL. Workshop-Conference on Computer Applications to Hospital Dietetic Information, Ohio State University (July 9-12)1967.

WEISMAN, CRAIG AN AUTOMATED APPLICATION IN THE UNIVERSITY HOSPITAL. Dept of Dietetics, Univ of Wash, Institute on Dietary Dept Admin, Amer Hosp Assn and Amer Diet Assn (Feb 22)1966.

WEISSMAN, HERMAN B ANTHROPOLOGY AND THE TEACHING OF PROGRAMMING. Presented at Western Region Winter Meeting of COMMON Los Angeles, Calif (Dec 7)1965.

WILLIAMS, JUNE E A PERFORMANCE AND COST EVALUATION PROGRAM FOR A HOSPITAL DIETARY DEPARTMENT. Amer Diet Assn, 49th Annual Meeting, Boston, Mass 1966.

ADDENDUM

BLACKBURN, C.R and BALINTFY, J.L THE APPLICATION OF AN ON-LINE INTEGER PROGRAMMING CODE TO COMPUTER ASSISTED MENU PLANNING. Presented at the ORSA/TIMS Joint Meeting, San Francisco (May 1-3)1968.

McCONKEY, ROSEMARY THE APPLICATION OF DATA PROCESSING TO DIETETICS. 31st Annual Convention, The Canad Diet Assn, Saskatoon, Saskatchewan, Canada (June 23)1966.

COMPUTER APPLICATIONS AND RESEARCH PROGRESS REPORTS

GENERAL

DODGE, QUINDARA OLIVER MASSACHUSETTS DIETETIC ASSOCIATION -MDA-EDP SPECIAL STATE PROJECT. B. Donaldson. AHEA Inst Mgt Res, Univ of Wisconsin Started Aug, 1965 Report 1966.

BREWER, JESSIE, LEIDIGH, MARY E PRELIMINARY PLANNING FOR USE OF A COMPUTER IN RHFS PURCHASING AT OKLAHOMA STATE UNIVERSITY. B. Donaldson, AHEA Inst Mgt Res, Masters thesis, Oklahoma State Univ, Sept 1965 Report 1966.

DYLLA, HENRY F. (Personal Communication) FOOD PREFERENCE SURVEY (July-Aug)1965 ARA Serv Lombard at 25th, Philadelphia, Pa.

Extract: "Enclosing a sample Food Preference Survey questionnaire, one of four that we use. For large groups, each person taking part in the survey receives and completes only one questionnaire. The computer tabulation is obtained for each school and then a combined tabulation for each region." "Our company uses the computer system for operating reports, payrolls and tabulation of food preference surveys. We are planning to do our Nutritional Audits at school and college locations using the same system."

WALEK, CAROL, Director, Standards AUTOMATIC RETAILERS OF AMERICA, INC. Lombard at 25th Street Philadelphia, Pa. 19146.

Extract: "Purchasing. All authorized purveyors are listed according to food product categories, e.g., dairy, groceries. Unauthorized purchases by individual unit managers are indicated. Periodically the dollar volume of purchases in each food category is recapitulated. Quarterly the grocer from whom we purchase the majority of our groceries provides us with a product recap showing units purchased, dollar volume and percentage of total purchase for each item. Recaps are likewise shown for each of our individual units." "Recipe Costing & Analyses. Current cost figure and nutritional values have been placed in a computer tape file for all recipe ingredients. We have programmed to produce a cost/serving for every recipe and will shortly know nutritional values based on tables from USDA Handbook 8. This information will be the basis for statistical analysis of price histories and regional analysis of costs. As served menus will be analyzed nutritionally." "Food Preference Surveys. Presently we are conducting surveys each year in all schools. Just recently we began to use them in industrial accounts. The tabulation of all surveys helps us to plan our Menu Guide to include the most liked items. Individual survey results are used by the manager to help improve service to his clients." "Nutritional Audit. This audit is a comparison of the foods used in serving contract boarding patrons versus the foods that are needed nutritionally for the subject school's sex and age group. The audit is conducted once a year in each school serving 3 meals a day, seven days a week. Foods used during a two week period are recorded. No allowance is made for cooking or plate waste. The figures are compared to the National Research Council's standards. The menu is analyzed for any areas lacking, and the manager instructed on ways to improve menu. Students are encouraged to improve eating habits."

DEMARCO, MARY Director of Dietetics Cleveland Metropolitan General Hospital Cleveland, Ohio July 1, 1966.

Extract: "Existing Department recipes are re-tested in quantities of fifty (50) in Experimental Kitchen. Dietitian in this area checks weights, measures and refines procedure." "Recipe goes to dietitian in recipe data assimilation office and she (she's fulltime in this area) expands recipe information into food item, specs, quantity to purchase, amount required, production and time, etc. The information is to be re-arranged by time, i.e., assembly, manufacturing, panning and cooking with "0" hour being meal time." "The model (not designed yet) will have three days' food production meshed together and the print-out will then go to - "Main Kitchen where it will be produced as the machine or print-out indicates." "This concept is designed for defined quantity food production. It will hopefully, ultimately - print-out food specs and orders, costs, and the production procedures." "Labor hours will be assessed in proportion to the volume of food to be produced."

COMMISSION FOR ADMINISTRATIVE SERVICES IN HOSPITALS. DIETARY STAFF UTILIZATION AND CONTROL PROGRAM Commission for Admin Serv in Hosp, 4777 Sunset Blvd, Los Angeles, Calif 90027. (Nov)1965.

Abstract: Report outlines objectives and procedures of dietary staff utilization program developed for hospitals by CASH. Exhibits of forms and questionnaires used to record data are included. Program is designed to determine staffing requirements for each major function of dietary department; provide means for equitable work distribution; supply on-going control index of personnel utilization; and provide means of evaluating alternative dietary systems. Report describes necessary procedures for implementing the program in a participating hospital. CASH will compute Monthly Personnel Proficiency Report, depicting utilization index for each participating hospital. (Abstract of Hospital Management Studies, Sept, 1967).

STRANDWITZ, PETE (Personal Communication) General Manager Electro Measure, Inc. 624 Valley Rd. Menasha, Wisc. 54952 Aug 1, 1966.

Description: For the past three years Electro Measure, Inc, of Appleton Wisc, has been developing and testing computer bar control systems. These systems are designed to give management positive cash and quality control and to eliminate spillage. Up to 30 straight drinks and cocktails are automatically dispensed from 10 bottles and simultaneously rung up on a cash register. An electronic computer mixes any quantity of gin, whisky, brandy, scotch, vodka or rum with any quantity of dry vermouth, sweet vermouth, lemon juice or lime juice. The computer also correctly rings up the register. Management sets the quantities and prices and then locks the controls. A drink is mixed in about two seconds. Studies show that the system will handle between 80 to 85 per cent of an average bar's volume. (Strandwitz).

SURVEY OF APPLICATIONS IN THE FOOD SERVICE INDUSTRY. Institutions 400-1966, Institutions Magazine.

Extract: "THE ERA OF E.D.P---The computerized bandwagon is just beginning to roll for the food service/lodging industry. Thirty per cent of the 400 have part or all of their basic accounting functions computerized. Through the advent of time-sharing techniques the number should increase. Some have gone beyond computerizing basic functions; a sampling:

RESERVATIONS & MEMBERSHIP
Downtowner (to begin)
Holiday Inns
Inter-Continental Hotels
Playboy Clubs International
Sheraton
Western International

COST ANALYSIS & CONTROL
A-G Foods
Drug Fair
Forum Cafeterias
Kansas City Schools
Mister Donut
Pan Am
Red Barn
Service Systems

INVENTORY CONTROL & PURCHASING
Baltimore County Schools
California, Univ of, Berkeley
Cincinnati Public School
Denver Public Schools
Detroit Public Schools
Dog N Suds
Fred Sanders
Howard Johnson
Inter-Continental Hotels
Kentucky, Commonwealth of
Los Angeles County
Michigan State Univ
Missouri, Univ of
Mister Donut
San Diego Public Schools
Specialized Management Services
Steer Inn Systems

SALES, MARKETING ANALYSIS
A & W
Bonanza International
Burger King
Jerrico
Red Barn

SPECIAL PROJECTS
Saga

FOOD SURVEYS & MENU PLANNING
ARA
United Airlines

RATION CALCULATIONS
Calif, Dept of Mental Hygiene
Wisc, Univ of

"COMPLETE" COMPUTER SYSTEM
Dutch Pantry
Royal Castle

LAKE, RAYMOND B DATA AUTOMATION RESEARCH AND EXPERIMENTATION - STATUS REPORT
The Memorial Hosp of Long Beach (April 1)1965.

Abstract: First progress report of project attempting to design a "Hospital Information System," conducted at Memorial Hospital, Long Beach, California. The authors describe several similar projects briefly, and outline their own goals, staffing, and schedule (completion of a working basic system by Feb 1, 1967). A systems analysis approach is used, tracing five levels of complexity: (1) gross identification of interfaces, (2) details of existing subsystems, with quantitative estimates, (3) general design synthesis (4) detailed design, (5) programming and implementation. Constraints on hospital systems are discussed. There is a review of desirable criteria for machine systems and equipment. Departmental flow diagrams were constructed, and Blood Bank working papers are shown as examples. Message counts, files, and estimates of characters in file are given for 22 departments. A detailed study of doctors' orders is given, showing length, time distribution, department receiving, events dependent upon orders, and miscellaneous characteristics. These data are used in message load estimates and further evaluation of input devices. (Abstract of Hospital Management Studies, March, 1966 and June, 1966).

MINNESOTA HOSPITAL SERVICE ASSOCIATION COOPERATIVE ELECTRONIC DATA PROCESSING FOR MINNESOTA HOSPITALS. Minnesota Hosp. Serv Assoc.

Abstract: Detailed planning analysis for the provision of a central shared computer system for Minnesota hospitals. Describes organization, immediate and future applications, benefits, charges, and rough equipment specifications. Envisions a high speed central processor, teletype access at hospital, other forms of accounting, payroll and personnel records, inventory control and purchasing, accounts payable, property control and maintenance, and general ledger accounting are described in detail. Outputs illustrated. Blue Cross is central agency providing service. (Abstract of Hospital Management Studies, June, 1966).

SEARING, O.L. State Supervisor, School Food Services State of North Carolina Box 12197 Raleigh, North Carolina 27605. (Personal communication).

Extract: "All of our fiscal matters are handled by computer form reports received in the State Office. Printout provided considerable up-to-date information for administrative decisions in the individual school and school administrative units. This is done on an individual school basis and for all of the schools in the unit as well as the state monthly. The individual checks paying reimbursement to schools with National School Lunch Program funds are also written by computer and the necessary voucher register, payment advice, etc." "The rate of reimbursement per Type A lunch of National School Lunch Program funds for each of 2,000 schools using 50 considerations which use to require the efforts of four full time people during the summer now can be done accurately in a matter of minutes. In addition to food inventory calculations, food costs, labor costs, other costs, income values per plate by source and expenditures per plate by purpose, we can calculate for each school monthly the current figures and maintain a cumulative inventory of such vital statistics relating to the school monthly exactly how it stands, the administrative unit position and the status of each administrative unit in the State as compared to the State average." "Another program is concerned with the nutrient level of lunches. Each menu with the quantity of food can be run through the computer to determine the various levels provided by that menu with the quantities used to determine if the menu as served meets the minimum nutrient level recommendations of the National Research Council." "This school year we developed and put into practice a school food service computer program which we call "punch-a-lunch" which is essentially the completion of a lunch analysis by computer. In order to accomplish this, we have used the United States Department of Agriculture Buying Guide for Type A School Lunches in the computer, the amounts of protein-rich foods, fruits and vegetables and butter are punched on an IBM data card. The cards are punched by the managers of the individual schools and sent to the administrative unit office and subsequently to this office. They are run through the computer and a printout program is provided which determines the adequacy of the lunch in terms of protein-rich food, fruits and vegetables and butter showing the number of portions short or over and the percent of portions short or over, the number of days that a vitamin C rich food was served, number of days a vitamin A rich food was served and the days in which they were served. This then may be studied by the manager and supervisor to determine strengths and weaknesses in the individual schools to determine where too much food is being put on the plate at too high a cost for financial solvency. In addition, of course, it will show where inadequate amounts of protein-rich foods, fruits and vegetables and butter or margarine were used on any given days and how much short they are. This will greatly improve the adequacy of lunches and the financial status of schools. At the same time it will improve menu planning and the classification of Vitamin A and C rich fruits and vegetables. It will help to provide a greater variety of fruits and vegetables since we will attempt to spread the Vitamin A and C rich foods over the week and month rather than cluster them on certain days and be deficient on others. A careful study by the manager can greatly improve her operation from receiving this printout." "Each food used in the United States Department of Agriculture Buying Guide is coded and with a three digit code number. The school administrative unit code number is pre-punched on the punch-a-lunch cards before they are sent to the administrative unit as well as the individual school code number on the protein-rich food card. The manager punches the month of the year, the day which begins the particular week, the day of the week, the number of lunches which were actually served that day and codes all of the protein in the main dish and one other menu item which was used on that particular day and the amounts of the individual protein served. The same information is key punched on the fruit and vegetable card except the number of lunches which was already punched on the protein-rich card. The fruits and vegetables are also coded and the quantities listed which were actually served using as many cards as is necessary to complete the entire menus for that day. The cards are then fed to the computer and the printout received. A copy is sent to the individual school and one for the administrative unit office as well as retaining one in our office." "Currently we use the computer to record the vital statistics on all 12,000 school food service personnel, compute the hourly wage by person, by job classification, by administrative unit and for the State. Studies are done to determine the relative efficiency of labor in relation to the number of hours spent for the number of lunches served in each school, each administrative unit and the State." "In addition a record is kept of all school food service training courses satisfactorily completed, total number of hours worked, money received for each school, administrative unit and the State. The cost required to raise to any given level of financing in terms of Minimum Wage Law is calculated. For example, $1.60 by 1971 from the current salary schedule." Manuals: (1) Administrator's Guide for EDP Forms. (2) Operational Procedures Guide.

WENBERG, BURNESS G. and GRIESEN, JAMES V (Personal communication) SURVEY OF FACULTY/STAFF MEMBERS OF ADA-APPROVED DIETETIC EDUCATIONAL PROGRAMS, 1967-68, The AMERICAN DIETETIC ASSOCIATION. Ohio State Univ, Division of Medical Dietetics, School of Allied Medical Professions (May)1968.

Abstract: The Committee on Educational Practices, Dietetic Internship Council of the American Dietetic Association conducted a Survey Questionnaire of the 1,250 Faculty and Staff members of ADA Approved Dietetic Educational Programs in December 1967. Data included on the Survey were present position, previous dietary work experience, educational background and professional activities. These data were then keypunched and analyzed on the Ohio State University's IBM 7094 computer, utilizing the Bio-Medical Computer Programs written at the University of California at Los Angeles.

ADDENDUM

HILL, JUSTIN (Personal communication, June, 1966) Oklahoma Restaurant Assn. ORA COMPUTER PROGRAM FROM YESTERDAY'S KEEPER OF RECORDS TO TODAY'S FORECASTER OF SOUND RESTAURANT PLANNING.

Extract: "The site evaluation program was developed to determine by computer, the potential sales volume of a given location for five different types of food service operations, i.e. General Restaurant, Cafeteria, Drive In, Hamburgers, and Specialty. The program is designed to estimate within a five percent range (above or below) the sales potential of a location, based on the information supplied. Tests on existing locations indicate it will do this. This sort of information can be useful in: Evaluating a new location you are considering; Evaluating a present location to see if it is getting all of the potential business; Determining what an extensive remodeling or change in operation would do to the business; It could be helpful in securing financing. It can also help determine what probable effect such changes would have on an existing location as increased advertising; change in management, or more parking, by programing these factors into it."

FOOD PROCESSING, FOOD SERVICE AND HOTEL RELATED

BARCLAY, J.W (Personal communication, April 29, 1968) Seabrook Farms Co, Inc. Seabrook, New Jersey.

Extract: "We have partially completed our system of cost and inventory control utilizing EDP. A list of the reports we are receiving follows. (1) Daily and year-to-date production by catalog number of each of the several hundred ways we have of packaging foods. (2) Cost by Elements, weekly, monthly, and year-to-date by catalog number showing actual costs of raw materials, packaging materials, labor, fringe benefits, overhead, and a total cost of production per pound and/or per dozen. (3) Raw material inventory control is maintained by submission of necessary papers showing receipt and usage of raw materials by catalog number. All types of raw material foods and condiments have been classified and series of catalog numbers established for approximately 30 to 400 items. (4) Inventory control of finished goods. Inventory showing by catalog number and item description, daily inventory balances and all reserves for orders on hand deducted, leaving net balances shown available for shipment. (5) Payroll cards are marked for time spent on each production showing catalog number of product and labor code describing function performed by that person. Weekly runs showing regular hourly pay plus overtime are submitted to operating branches. This material is the source for use in establishing cost by element for labor. (6) Weekly, monthly, and year-to-date reports on expenditures for maintenance and special projects analyzed by work order numbers both recurring and nonrecurring, both by performing department and receiving department. (7) Monthly report showing charges to overhead accounts comparing month and year-to-date figures with budgeted amounts and variance between them. (8) Profitability by catalog item weekly and year-to-date showing factory door cost of product compared with average selling price for the period and percentage of gross mark up. The catalogued items in this report are grouped by brand name and total figures give the information for the complete brand line." "These are all of the reports which are made up at the present time concerned with production, accountability, and costing. There are many more reports made of a like nature for the various other operating departments such as the Farms, the Vegetable Factory, the Maintenance Group, etc."

NELSON, WILLIAM (Personal communication, May 1968) Manager of Food Service, University of Southern California, Santa Barbara, California 93106.

Abstract: Present system is operational, utilizing an IBM 360-30. Recipe data is in file and from this food costs of manually planned menus can be forecasted and the food order requirements computed for the purchasing department. Absenteeism rates are also computed.

COFFEE, MARY ANN GIBBONEY (Personal communication, April, 1968). WHITE CASTLE SYSTEM EMPLOYE CAFETERIA, INVENTORY COST EVALUATION SYSTEM. White Castle System, Headquarters, Columbus, Ohio.

Abstract: A request to provide inventory cost figures for accounting and insurance requirement coupled with a need for an accurate picture of intake and output prompted the development of an inventory evaluation system. Due to the computation and volume involved, it was written for the computer. The computer master file included the following information for each inventory item; item number, the purveyor's name, the number of units per lot, and the cost per lot. The item numbering system allowed for grouping like items into general identifying categories. The system is expandable in that new items and price changes are easily handled. At month end the total dollar amount spent, the cost per lot, and the current inventory of all items together with the master file are used to report the value and quantity of items used that month and the inventory evaluation of the entire stock.

BOULINEAU, FRED (Personal communication, Sept 3, 1965) MARRIOTT - HOT SHOPPES 5161 River Road, Washington, D.C. 20016.

Extract: "Our program of development has been directed primarily to mechanizing accounting control functions which are relatively similar to principle from one business to another. In the long run, however, we plan to get into the development of a more varied program schedule. Some of these projects are: (1) Menu analysis (2) Menu planning (3) Item analysis of food usage to show losses against standards (4) Production control (5) Labor scheduling and utilization (6) Delivery logistics problems including loading factors, order, scheduling and routing. We are presently building a new production plant and will implement a full production control program on a real time basis on all major production batches. To sum up, we have much work which needs to be done; probably two years will be gone before we are ready to implement fully some of these programs."

Title of study: Cornell Hotel Administration Simulation Exercise

Location: Cornell University, School of Hotel Administration

Report submitted by: Robert M. Chase, Assistant Professor, Department of Engineering

Initiation date: September 1967 Probable Completion date: Spring 1968

Principle investigators: Dennis Ferguson, Joseph Moore, Robert Keim, Thomas Diehl, Donald Eames

Resume of study: Purpose to develop a computer management game for use in the undergraduate instruction program at Cornell, in workshops at the school, and workshops at various locations throughout the world. Method of Data Processing: The source program is written on FORTRAN IV. Any machines capable of handling FORTRAN IV should be able to process the game. Statistical Studies of the decisions made by participants will be tabulated for the next several years to determine the effectiveness of the game structure in terms of promoting high level management decisions by the participants.

Progress of the last year: Computer program completed. Participants' manuals, and administrators' manuals written. The game has been played several times at Cornell.

Future plans: Include the integration of a restaurant game within the framework of the hotel game. This nesting of a restaurant game will give a single corporation having two operating sub-divisions contributing to the profit or loss pictures within the parent corporation. It is anticipated that a controller's game will also be added to give a third financial dimension within the parent game.

Publications: none reported.

Title of Study: Payroll Overview, formal title not provided

Location: Cornell University in Cooperation with National Cash Register Co, Dayton, Ohio

Report submitted by: Charles I. Sayles, Professor, April 1968

Initiation date: December 12, 1967

Resume of study: It is the intention to create a semi automatic payroll which will, among other ends, provide to departmental supervisors a list, prior to payment, to be verified or amended and subsequently produce checks in accordance with the approved document. Pay period shall be at the discretion of the operator for week, calendar month or 4 week period, or quarter. It is desired to enter a weekly recurring schedule which shall remain in force for all employees, and from this schedule determine hourly rates and daily earnings. From the daily earnings will be determined daily costs, updated to weekly, monthly, four week, quarterly and annual, whether 52 weeks or a calendar year. Each schedule will possess a "home" in a cost center, from which an employee may be borrowed from time to time, producing a new earning and cost in the new center, and crediting the old. Additions to and subtractions from the schedule will occur from time to time increasing or decreasing the hours and earnings. Bonus pay resulting from these actions will be computed and accounted for. The definition of bonus time is that time in hours worked over a stated value. Bonus pay is that pay received above the regular pay for this time. It is intended to develop a system which will permit dynamic on line action under which conditions the presence of an employee will be determined by suitable input, such as the insertion of an identification in a card reader, which will validate that individual's time and pay for that day. It is further desired to create a ticklor file for the future, permitting a future schedule created now to replace the existing schedule on a predetermined date. An example of this situation is the creation of schedules for a busy period such as a convention. It is a requirement of the dynamic system that an employee shall receive some recognizable signal which indicates a refusal of the system to accept his identification if he is not scheduled for that particular time. The system should further function for a hotel which delivers its information to a service bureau either by physical transport of data or wire transmission. The relationship of data is shown by an accompanying algorithm, the contents of the employee record by an accompanying list. Numerous reports will be required, but the primary objectives are: (1) write a pay check (2) produce a pay stub (3) assure that the state wage is being met (4) allocate costs (5) provide a check register (6) provide a ledger for each employee on demand to support minimum wage information. A comprehensive list of reports appears elsewhere. A schedule associated with each employee will have the hours scheduled for each week day, including "no hours". It is presumed that each morning an entry will be required giving: Year Month Day (of month) Week Day (Monday, Tuesday --) Dayth (February 7 is the 38 dayth) the above information being defined by the term Today, so that when this term appears in the definition the total information is presumed. Thus Today's hours implies the use of Wednesday's schedule if Today is Wednesday. Actions seem to be divisible into schedulable and non schedulable categories. For example, input of hours adjusting schedules is non schedulable, as is validation of "today's employees, but the computation of costs or the creation of payrolls is schedulable. The creation of files thus presents a problem.

Publications: none reported

HOSPITAL RELATED

Title of Study: Linear Programming for Dietetics

Location: Department of Data Management, VA Central Office, Washington, D.C.

Report submitted by: Helen M. Brisbane, Dietitian December 19, 1967

Initiation date: Investigative study in 1963 Probable Completion Date: not established
Feasibility study Oct 1963 - June 1964
Test and Development Oct 1964 to date

Principle investigators: 9 project personnel

Resume of study: Purpose: Develop an operational recipe selection and food requisitioning linear programming system that will satisfy preference, frequency, nutritional and cost requirements for the Dietetic Service of the Department of Medicine and Surgery. Requirements: The system must be capable of handling regular and modified diets and take into account the use of selective menus in hospitals. User Products: (1) Quarterly list with recipe cost and nutrition per serving (2) Quarterly L.P. solution list that the dietitian assembles into menus. Solution if for regular (selective) and non-selective bland, 1 gm. sodium and 2200 calorie diabetic diets. Other diets are written using these as a base. Solution currently is for 28 days which is fed as a cycle menu for three months. (3) Daily ingredient room list that gives quantity of each ingredient in proper amount for the census for each recipe on the menu. (4) Appropriate requisitions for subsistence procurement by VA Supply Service. Methodology: (1) Frequency and preference data attached to each recipe were acquired by a hedonic scale survey for 400 recipes by patients in all VA hospitals and domiciliaries. (2) Recipes in the file are being tested and retested by 37 VA Dietetic Services. (3) Operational use of end products are being tested and developed with gradual installation of system in selected hospitals. Data Processing: Equipment: Computers--one 360/40 and one 360/65 can be used. Programs: All programs have been written by project personnel except the linear programming program. For this purpose MPS (Mathematical Programming System) by IBM is currently being tested and will be routinely used.

Progress in past year: Effective in January patients were fed menus developed as a result of the project in one hospital. Three meal and five feeding solutions were developed and used by the hospital in the course of the year. In October two additional hospitals were added to the system. Nine additional hospitals have been selected for inculsion in the system. An educational package was developed and used to train hospital staffs. A recipe testing program was developed to include 37 hospitals. The first ingredient room listing were produced. Analysis of patient survey data continued. (Frequency and Pref) Many computer programs were developed and tested.

Future Plans: Continue development and refinement of current work. Add additional operational users to the system. Develop computer menus.

Publications: None.

Title of Study: Study of Computer Applications to Patient Dietary Care

Location: Division of Medical Dietetics, School of Allied Medical Professions, Ohio State Univ

Report submitted by: John Casbergue

Initiation Date: October, 1964 Completion date: December, 1965

Principle Investigators: John Casbergue, Marilyn Wallbank

Resume of Study: In 1963, faculty consideration was given to the role of EDP, its uses in processing dietetic information and the ways in which undergraduate students might be educated to plan and utilize this technological development. Most known research at that time had centered about two areas: (1) the use of EDP for processing nutrient data and (2) the use of linear programming for computer assisted menu planning or meeting prescribed nutrient levels (Brisbane, Balintfy and Victor E. Smith). Subject matter taught in the Medical Dietetics curriculum require application experience integrated with classroom theory. To provide experience, an attempt was made to construct a simulation model of a dietary information system that would process food service and nutrition information. A simulation model approach was used to simplify the development and to avoid normal policy, personnel and procedural constraints normally present in an operational system based on manual information processing. It was felt by the investigator and related faculty that a simulation model based on modern and practical food service management principles taught in the classroom and in use in effective dietary systems would be useful in education. The system was planned to be based on recipe data. The work of Tulane University regarding computer assisted menu planning was also based on recipe data; Dr. Joseph L. Balintfy made the U.S. Public Health Service Project recipe data collection manual available for use on this project. Systems design and analysis were accomplished and programming completed in SCATRAN for the Ohio State University Computer Center's IBM 7094 and support equipment. Nutrient data were as available in USDA Handbook No. 8, Table 1, purchased in punch card form. This system operating in batch mode was useful in demonstrating the feasibility of utilizing EDP in processing basic food service and nutrition information. Program documentation was completed.

Purpose of system: This system was designed to simulate the processes involved in performing the following functions for a given menu and menu period for any type of food service system.

1) forecasting raw food costs, nutrition data and storeroom issue lists;
2) providing an up-to-date listing of food amounts charged out of the storeroom; and
3) providing information for food service planning and food production and cost control and analysis.
4) providing historical information on nutrients served and/or actually consumed by a given patient (for use in correlating nutritional and medical information).

The simulation was to be designed so that it is as "open-ended" as possible - i.e., capable of processing unlimited amounts of data under actual production conditions.

Input

Forecasting

For the pilot project, the input was a set of non-selective menus covering a one-week period. In large-scale production, the input would be a set of up to 9999 separate menus for each meal of each day within a given period $\leq$ 999 days. These menus could be produced by processing selective menu choice documents (patient selection records) so as to consider each unique combination of menu items for a given meal as a separate diet meal, identified by a distinctive number. For example, if two dinner menus for a given day of the period differed by the selection or salad, they would be automatically assigned different diet numbers within the major number code indicating the meal and day of the forecast period. Non-selective menus could be processed along with selective ones. The concept of predicted and actual census would be unchanged from the pilot project to actual production with the following two exceptions: (1) for the pilot project, only a single set of census predictors or actual census figures is required. In actual production, there would be a set for each non-selective diet, and a predicted census for the period for estimated selected diets, with the actual census figures generated by the processing of selective menu choice documents. (2) the production system would have to provide for sudden diet changes on an individual patient basis. This problem is difficult to generalize because of the varying amounts of lead time required to implement such changes at various institutions.

Inventory Data

For the pilot project, it was assumed that all needed supplies would be already on hand in a storeroom. In actual large-scale production information about orders and receipts would be input to a program which would update a storeroom inventory master file, deduct the food amounts forecast for the menu period, and issue scheduled food order lists, based on estimation needs in conjunction with such considerations as specified re-order levels for each food item, lead time for delivery, storage factors, etc.

Nutrition Information for each Patient

During each daily run except the first, punched card records of the amounts of each menu item actually consumed (expressed as percentages of standard servings) by selected patients are read and matched against recipe records. The amount of each nutrient actually consumed by each patient for that meal are computed, output as a punched card and printed. In actual production, these detail records (nutrient consumption per meal for given patients) could be combined with master records containing pertinent data for each patient and manipulated to extract whatever data a given situation may demand.

Outputs

Recipe Lists

1. A log of recipes added to, changed, or deleted from the Recipe Master File. These do not contain cost information, as most recent cost information is inserted into the recipes actually used in a given menu cycle right before the Forecasting Run.
2. On option, a printout of all the recipes actually used in a menu cycle, including most recent cost information.
3. Abbreviated recipes for the use of the cooks, containing ingredient amounts, weight of a serving, total weight of recipe (current cost is optional) for that day's census; date, and hour when the food must be ready.

Listings as estimated for entire period and on an up-to-date basis based on actual census data for:

1. cost/patient by day, interval (any selected part of a period)and period.
2. nutrients/patient by day, interval and period.
3. average cost/patient for specific intervals.
4. average nutrients/patient for specified intervals.

Storeroom chargeout lists by day, interval and period, with costs by day, interval and period, and average daily cost by interval and period. Detail records of nutrients consumed per patient and a print-out of these records. Log of master file charges.

Master Files

Recipes

This is a moderately inactive file containing detailed information about each recipe in an institution's repetoire. Provision has been made to add, delete, or change recipes.

Nutrients

This is an inactive file composed of the nutrient tables for USDA Handbook No. 8, Revised December, 1963 plus additional foods and nutrient information as necessary. Provision has been made to update this file, but it is expected that this would be done only on these relatively infrequent occasions when improved nutrient data become available.

Raw Food Costs

This is a highly active file which will be updated during the forecasting run at the beginning of each menu period in order to reflect the latest figures.

The complete system included eight runs: Run 0: Nutrient Master file Creation Run; Run 1 - Input for Recipe for Masterfile Update, Run 2: Nutrient Insertion Run, Run 3: Recipe Masterfile Update Run, Run 4: Menu Cycle Data Input Run, Run 5: Cost Run, Run 6: Main Forecasting Run, and Run 7: Daily Run.

Title of Study: Computer Application in Patient Dietetic Care: A Model System for Computer Assisted Instruction.

Location: Division of Medical Dietetics, School of Allied Medical Professions, Ohio State Univ

Report submitted by: John Casbergue

Initiation date: October, 1966 Probable Completion date: Not established

Principle Investigator: John Casbergue

Resume of Study: The pilot project described in earlier research progress report was based on batch processing mode and thus not easily available for "hands on" use by undergraduate or graduate students. A planned conversion was to make the system more available through remote terminal processing (as well as batch processing). The Ohio State University College of Medicine acquired an IBM 1401 with remote terminal capability. The basic system described in earlier report was reprogrammed in COBOL and AUTOCODER for use on the IBM 1401. Remote terminal programming was completed for (1) forecasting of cost and nutrient levels of manually planned menus (when census data was provided) for any meal, day or period (total and/or averaged) and (2) nutrient intake calculations (based on USDA Handbook No. 8, Table 1) for one meal, day or period (total and/or averaged). In forecasting (remote terminal only) individual recipe numbers of each meal are typed in via an IBM 1050 terminal and student selects options of forecasting costs and nutrients for desired period or other options. For nutrient intake calculations, students type in recipe number(s) and percent of each portion(s) of each menu item consumed. Verification is an automatic function on remote terminal processing in this system. The interactive process between the student and the computer system allows the opportunity to develop an understanding, in the investigator's opinion, beyond that offered by reading or lecture. It also conserves student time spent on calculating nutrient intake of study patients (five to eight hours was normal time required for calculations of 17 nutrients (one day's intake) on an electric calculator during basic patient care course versus five to seven minutes on remote terminal). The model system has also been utilized for nutrient research purposes.

Present Plans: Conversion of programs written for batch and teleprocessing on IBM 1401 for use on present IBM 360, model 40 is underway. Forecasting of cost and nutrient levels has been completed. Nutrient intake programs are being extended to allow students the option of reporting intake as percent of portion(s) consumed or actual gram weight of consumed each menu item. Batch processing programming for 360-40 has been completed for:

1. Forecasting of cost and nutrient day for meal, day or period.
2. Recipe conversion (ingredients increased or decreased depending on census).
3. Nutrient intake calculations based on percent of portion(s) consumed for meal, day or period.
4. Recipe cost runs. Any or all recipes on file can be updated for price changes by altering price fields on food item card(s) and processing.
5. Recipe data testing: useful for determining input errors or incorrect recipe data.

Future Plans:

1. Provision for use of EDP in all courses in Medical Dietetics where applicable. Quantity Food Production Management, Menu Planning, Food Procurement, metabolic and other patient care studies, statistical and other dietetic data processing requirements).

2. Program documentation (when complete) will be made available for use by any interested educational institution or program.
3. Interface with current dietetic application phase related to a developing Hospital Information System (dietetic section described elsewhere in this section).
4. Continue to be available for use in continuing education programs or workshops.

APPLICATION OHIO STATE UNIVERSITY HOSPITAL DIETARY DEPARTMENT.

Abstract: A system research effort is underway to develop a hospital information system (HIS). The dietary department will be an integral part of the HIS in its early stages. Present dietary objectives are to complete programming that will result in:

1. Diet order entry via remote computer terminal.
2. Daily printing of selective regular and modified diet menus with patients name, number and room location. The individualized menus will be based on diet order entry and/or diet changes. Menu items offered each patient will meet diet, allergy or food preference restrictions. Blank menu forms are pre-printed on heavy stock suitable for use on high speed EDP printers.
3. Dietary receiving via remote terminal, notice of diet order changes, NPO's and admission/discharge information.

Planned Objectives:

1. Extension of above to interface with other phases of HIS.
    a. Pharmacy: food-drug toxicity information.
    b. Laboratory - monitoring of lab test orders with appropriate messages to dietary for diet alteration if necessary.
    c. Other - Radiological procedures, administrative information; room scheduling and others.
2. Nutrient intake calculations.
3. Individual meal or nourishment cards printed out for each patient's tray indicating menu items to be served.
4. Diet history information - data recording is to be automated and made available to medical or dietetic staff, teaching faculty and nutrition clinic for out patient care.
5. Long range plans include an evaluation of nutrient profile for future. Consideration is being given to including nutrients presently carried in USDA Handbook No. 8, Table I plus amino acids, fatty acids, sugars, minerals and trace elements. Availability of usable data is a recognized limitation.
6. Implementation of systems in dietary administration related to food service planning and production (cost and nutrient forecasting and evaluation, food requirements projection and ordering inventory control, issue authorization, preparation and pre-preparation authorization, cook's recipes, cost accounting and budget reporting and analysis.) (Casbergue).

Title of Study: Computer Based Management System

Location: University of Missouri Medical Center, Department of Nutrition and Dietetics

Report submitted by: Janet Andrews and Byrdine Tuthill

Initiation date: 1964 Probable completion date: Continuous project

Principle investigators: Aimee Moore, Byrdine Tuthill, Janet Andrews

Resume of Study: The Department of Nutrition and Dietetics at the University of Missouri Medical Center is exploring the possibility of using electronic data processing as a basis for management planning and control system. Goals of the project are to program the computer to make decisions which are repetitive and of a nature which can be quantified, and to have the computer identify problem areas which need the managers attention. At the same time, the computer can perform repetitive clerical tasks to provide current information and relieve employees for more productive work. The diagram shows information flow, processing, and results of the system. This system is being implemented as the components are developed and the data is collected and quantified. At the present, the Inventory component for automated inventory control and purchasing recommendations is operational. While computer planned menus are being served at the Medical Center, this subsystem is in an experimental state. The Food Cost Accounting component which provides a method for breaking-out costs of feeding patients and non-patients from the

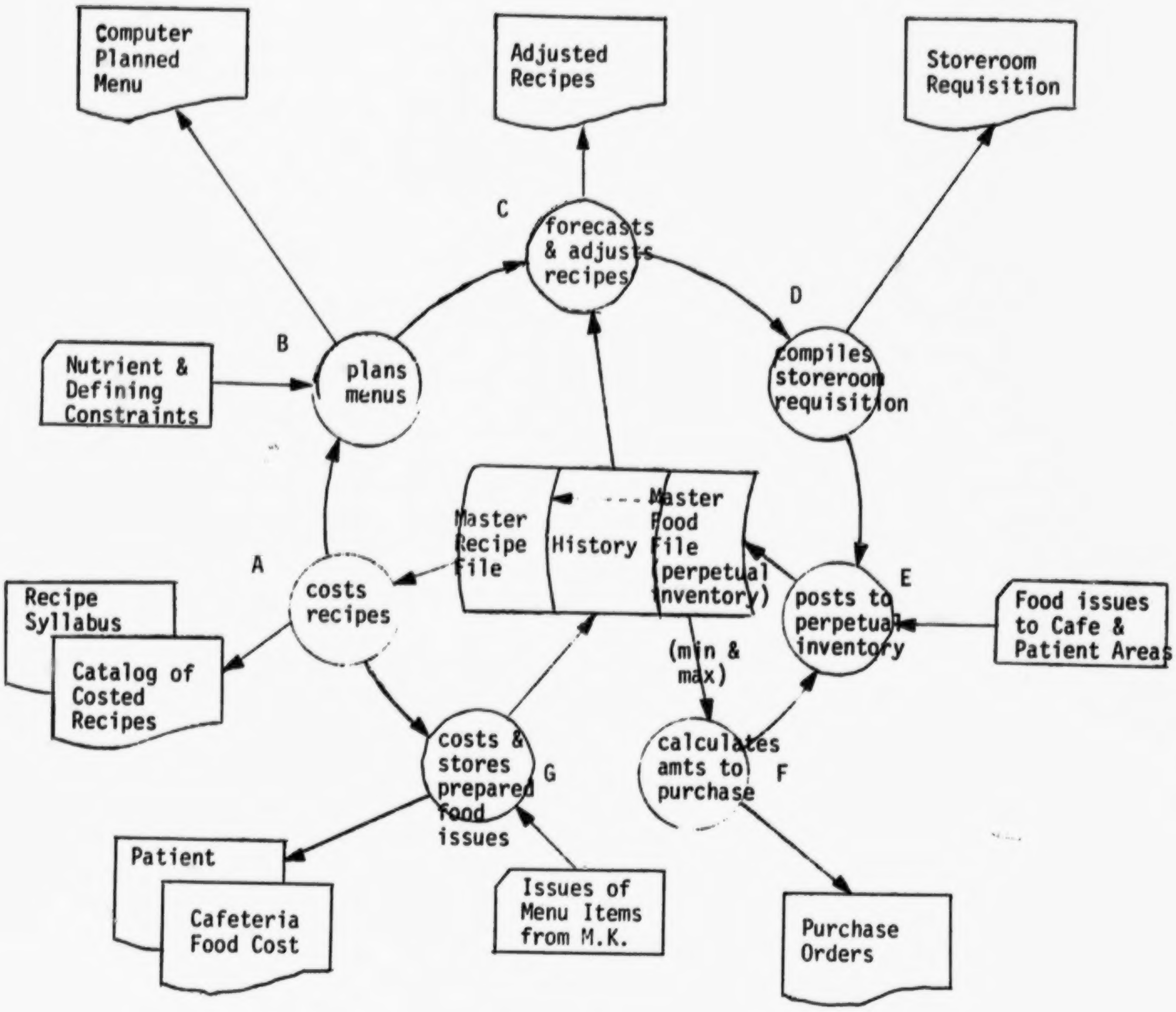
Computer Planned Menu
Adjusted Recipes
Storeroom Requisition
C
forecasts & adjusts recipes
D
compiles storeroom requisition
B
plans menus
Nutrient & Defining Constraints
Master Recipe File
History
Master Food File (perpetual inventory)
A
costs recipes
E
posts to perpetual inventory
Food issues to Cafe & Patient Areas
Recipe Syllabus
Catalog of Costed Recipes
(min & max)
costs & stores prepared food issues
G
calculates amts to purchase
F
Patient
Cafeteria Food Cost
Issues of Menu Items from M.K.
Purchase Orders

FIGURE 1
INFORMATION FLOW IN COMPUTER BASED MANAGEMENT SYSTEM
University of Missouri Medical Center, Department of Nutrition and Dietetics

total cost of food issued to a central kitchen has been tested and is to be implemented in the next few months. The Production Control element for generating storeroom requisitions has been designed and is to be tested in the Spring of 1968. The circles on the diagram designated by letters illustrate processing within the system. The order in which they are discussed below does not indicate the sequence of occurance. In fact, processing occurs almost simultaneously. (1) Recipes are costed electronically using the master recipe and food file. The recipes are recosted each time purchase prices change (twice monthly). (2) These costed recipes are used along with nutrient information and defining constraints to plan menus. These menus are planned by use of the linear programming technique which minimizes cost while satisfying all defined constraints. (3) History of menu item usages are used to forecast production amounts. Then the recipes for the menu are adjusted to the quantity needed for production. (4) These adjusted recipes are compiled into a storeroom requisition which is used to instigate the flow of food items from the internal storeroom to an ingredient room and to the main kitchen. (5) Amounts issued from the internal storeroom and amounts purchased and delivered to the Medical Center are automatically posted to the Master Food File in order for the computer to keep a perpetual inventory. (6) Amounts to purchase are determined by the electronic system by comparing amounts-on-hand to a minimum reorder point. (7) Issues of prepared food from the central kitchen (chili, meat loaf, etc) are transmitted to the computer. Each day these issues are costed using the recipes as a basis thus, the cost of feeding patients and cafeteria patrons are broken-out of the total food cost. The prepared food issues are stored in the history file and will subsequently be used for forecasting. The implication of this study is that it appear feasible, with considerable research, to construct a management system which will improve an administrators effectiveness in food service by integrating the powers of scientific decision making and the speed and accuracy of electronic data processing.

Publications: None reported

Title of Study: Proposed EDP Application (personal communication)

Location: Walter Reed General Hospital

Report submitted by: Jane F. Sager, CPT, AMSC (March 11, 1968).

Resume of study: An Army Hospital Food Service Data Processing System is now under design to convert to computer many operations involved in the administration of a Food Service Division. If approved by Department of the Army, and when fully implemented, it will (1) increase the precision of numerical information and the speed at which it can be calculated (2) eliminate much time-consuming clerical work, and (3) make available information impossible to provide and maintain manually, for both the dietitian and the physician. The completed System will encompass (1) extension of recipes to the number of servings needed, (2) ingredient summaries to be used for requisitioning purposes, (3) a perpetual inventory system which will generate food purchase requests and cost data, (4) cost accounting, (5) nutritional analysis of regular and modified diet menus, (6) nutritional analysis of individual patient actual food intakes (on physician request), (7) food production scheduling, (8) employee task scheduling (9) kitchen equipment scheduling, and (10) census forecasting.

Publication: none reported

Title of Study: Computer Assisted Menu Planning

Location: Midwest Research Institute, Kansas City, Missouri

Report submitted by: Dean W. Lawrence

Initiation Date: Project June 15, 1967 Probable Completion date: Indefinite
Operation April 1, 1968

Principal investigator: Dean W. Lawrence, MRI and Marvin Hunt, Research Hospital and Medical Center

Resume of study: (1) Purpose and methodology: Supply Kansas City and other regional hospitals with computer assisted menu planning. (2) Method of Data Processing and plans for tabulation and analysis. The dietitian plans a least cost selective menu by using a conversational mode with an IBM 360 Model 30 computer. The methodology is the standard integer programming technique developed by Joseph Balintfy. At present there are no plans to develop research data in this project.

Progress in past year: So far efforts have been concentrated in one institution, Research Hospital and Medical Center in Kansas City. Collection of all data necessary to plan regular diet menus is now complete. Programs to build the recipe file and maintain it as well as building and maintaining food and nutrient files have been completed. The programs to do the actual menu planning are in the final stages of development.

Future plans: We anticipate the development of a complete dietary information system to supplement the menu planning programs. As of yet, these programs have not been fully specified but we expect to complete the implementation of them in the summer of 1968. Hopefully we will install the system in other area institutions in the coming year. We hope to focus our research efforts on the various data structures required by menu planning, and dietary information systems.

Publications: None to date. We do anticipate publishing several articles in the next year.

Title of Study: Computer Recipes in Quantity Food Production

Location: Cleveland Metropolitan General Hospital, Cleveland, Ohio 44109

Report submitted by: Mary R. DeMarco, Director of Dietetics

Initiation date: April, 1966 Probably completion date: March, 1969

Principle investigators: Mary R. DeMarco, Helmi Mason, and Susan Vierow

Resume of study: Purpose and Methodology: The purpose of the study is the development of a recipe format for improved "input" information that is designed for a computer system that will schedule the production of food on a "time" basis. Method of data processing and plans for tabulation: The type of computer hardware to be used is one of the IBM 360 series.

Progress in last year: The recipes for the 3-day project have been tested in the experimental kitchen. They are based on 50 portions.

Future Plans: In the second phase of the study the same recipes of the 3-day project will be produced to their maximum batch factors. The intent is to prove or disapprove the time-ratio formula for additional batchs of food to be produced.

Publications: DEMARCO, MARY R, MANN, S.L and MASON, H.A COMPUTER RECIPES IN QUANTITY FOOD PRODUCTION. Hospitals V41(April 16)1967.

Title of Study: Automated Menu Planning

Location: Kansas State University

Report submitted by: Grace M. Shugart

Initiation date: July 1965 Completion date: February 1966

Principle investigators: Robin Brown, Marjorie M. Hemphill

Resume of study: This study was part of an overall menu planning project, still in progress. This portion was to develop a computer program to plan a non-selective menu with emphasis on color, shape, texture, and flavor, suitable for service in University residence halls. Data used for computer input consisted of selected menu items saved in KSU residence halls, raw food costs, serving frequency ratings, and menu item classification. Each menu item was coded with a five digit number related to texture, flavor, color, shape, and method of preparation.

Restrictions were placed on the number of times that each characteristic could appear in one day, and on the appearance of certain classes of menu items. Recommended nutritional allowances were fulfilled by establishing a menu pattern compatible with recommendations of the U.S.D.A. Each day's menu included lunch and dinner meals only. Menus for 21 days, using 152 menu items in each of seven menu classes, were planned. From these 21 menus seven were selected for closer evaluation. Each of the seven computer menus was compared with two residence hall menus featuring the same entree by a panel of dietitians. Preference for computer-planned menus was indicated in five out of 14 instances. Under conditions of this study, techniques of random selection appeared feasible for planning non-selective menus by computer for university residence halls. Work needs to be done on refining the coding and coordinating that coding with other coding needed for other factors in menu planning. Further work is in progress.

Publications: none reported at time of submission of report (see subject listing)

Title of Study: Menu Planning for Group Feeding

Location: University of Nebraska, School of Home Economics

Report submitted by: Marie E. Knickrehm, Ph.D., Professor

Resume of study: Objectives: (1) to test selective menu planning on the computer for planning nutritionally adequate menus within the framework of financial limitations of the quantity food service establishment. (2) to plan nutritionally adequate menus for individual families. (3) to develop and test a method for scheduling the production of a menu planned by computer for a large quantity food facility. Basic data on customer preference and frequency of acceptance of menu items; cost; coding of menu items to indicate texture, flavor, color, and temperature; preparation time; and labor and equipment to prepare and serve the menu are needed for computer menu planning. A study has been completed at Nebraska to supply the following parameters for planning selective menus by computer: (a) Maximum desired frequency of service of menu items, (b) percentage of students unfamiliar with the item, and (c) percentage of students who will not eat the item. Furthermore, a coding system has been devised to code for color, flavor and texture.

Publications: none reported.

Title of Study: EDP Selective Menu Tabulation with Production and Distribution Sheets

Location: Yale-New Haven Hospital, New Haven, Connecticut

Report submitted by: Doris Johnson, Ph.D.

Initiation date: August 1966 Probable completion date: June 1968

Principle investigators: Joyce A. Foss, Doris Johnson, Ph.D.

Resume of study: In the summer of 1965 preliminary studies of forms analysis and information flow as well as a pilot study of food preference among personnel were undertaken in the Department of Dietetics at Yale-New Haven Hospital to determine the areas and which types of computer application would be most feasible for the department. From these and studies done previously by the hospital's systems engineer it was concluded that a project in computer tabulation of patient selective menus would be undertaken. The purpose of this project was to devise a system whereby patient selective menus could be used as input data for the computer to produce total food production sheets for the various units in the main kitchen and sub-totals for each of the patient divisons and cafeterias (centralized food production, 29 distribution locations located in 4 major buildings connected by tunnels). The master 5 week cycle menu is changed for the four seasons of the year with weekly alterations as cost or availability of items or production problems deem necessary. All regular and modified diets use selective menus with multiple choices available for most all modified diets more complex than clear fluids. From the outset of the project one aim was to avoid having the patients menu printed on 80 column punch cards. For this reason patient selective menu format was developed on an 8½ x 11 score type sheet to be marked with an ordinary #2 lead pencil and read on the IBM 1232 Optical Mark Page Reader that generates punch cards which are then read into the computer for processing. Presently the Honeywell 400 is being converted to a Honeywell 1200. Three patient selective menus are used, namely regular, pediatric, and modified. The basic EDP menu forms are identical except for color and the coding for modification of fiber, fat, carbohydrate, and sodium on the modified form which affect food production. Food items in the master file are identified by a 4 digit decimal number for name of item and a 4 digit binary number for modifications prepared at this institution. Using the master file and master menu, individual EDP selective menus are coded for Data Processing whereby multilith masters are printed on the computer for the duplicating of patient menus each week. Selective menus are distributed to the patients at breakfast for marking selections for the following day. Dietitians update menus for admissions, discharges, and changes throughout the day until 7 p.m. when the menus are sent to Data Processing. The resulting computer printout and patient menus are returned by 5:30 a.m. the following morning to two major Department of Dietetics Offices. The total time for Data Processing to read the menus in the IBM 1232 averages 3½ - 4 hours and the computer time to process the accumulated data resulting in production sheets for main kitchen and food orders for the divisions requires 20 minutes per day. To tally selective menus manually in the previous system and to prepare food orders and production sheets required an average of 12½ hours per day. Because of unique specifications for the Department of Dietetics on the IBM 1232 mechanical failure on this equipment requires hand tallying of menus if there is insufficient time for repairs during night processing of patient menus. Computer back up is of course available and the Department of Dietetics holds first priority for work during the night. Future plans are to prepare a master file of standardized recipes on magnetic tape by which the recipes for each day's food production may be printed out as a result of patient food tabulation and cafeteria orders.

Progress in past year: Forms revision

Future Plans: Standardize recipes to print out recipes for production as a result from tabulation.

Publications: None reported

WEISMAN, CRAIG (Personal communication, April 16, 1968) Director Dietary Department, Univ Hosp, Univ of Wash, Seattle, Wash 98105.

Extract: "Essentially the following outline provides a status report of our efforts: (1) Four daily diet therapy menus are distributed. These menus are listed from the menu cycle cards. The menu format permits tallying via the IBM 1230 Optical Scanner. NOTE: Because patients' trays are assembled in random diet sequence, the green stripes at the top of the modified identify for the employees the type of patient tray they are assemblying. (2) The Production Quantity and Inventory Needs listing is also prepared from the menu cycle cards. This report is used to establish the production quantities and initiates a review of the storeroom inventory prior to developing the required purchase requisitions. (3) Again by using the same source card, the listing for food Preparation Assignments identifies the item to be prepared by the Hot Food, Bakery and Salad Areas. (4) The recipe formulas are on punched cards but must be cross-indexed to the menu cycle cards before they can be used beneficially. At this writing, the first reports to be generated by the IBM PAL Storeroom Inventory Control system have not been prepared; however all departmental system conversion work has been performed based on the 1440 system design. The recent decision to install a 360 computer within the Hospital will delay an "on the air" inventory system until August or September 1968 when the program conversion will have been completed. In retrospect you will recall our three point objective as being: (a) To develop the menu cycle via the computer, (b) To review the recipes for required ingredients (storeroom issue) based on a pre-established quantity. Product costs for the minimum inventory will be reviewed and updated. (c) Based on menu cycle requirements under Step B, the storeroom inventory stock levels will be checked. When the minimum level is exceeded, a purchase requisition will be initiated."

NUTRITION RELATED

ROMAN, ELEANOR, (Personal communication, May 1968) Nutritionist, CORONARY PREVENTION PROGRAM. Department of Preventive Medicine, Ohio State University.

Abstract: A Description of the Computer Diet Appraisal. This report describes a computerized procedure for appraising dietary intake according to 10 sources of nutrients. The input consists of individual quantitative data expressed as food intake; the output consists of a printout of an individual's dietary intake for each of 10 nutrients and 7 nutrient percentages. The data are also available on magnetic tape for further evaluation. Description of the Program. The program is operational on an IBM 7094 computer in Fortran IV. It is a modified version of the USPHS Control Data 160-A diet program. This program is designed for data storage and retrieval. A food composition table and operating instructions are stored in the computer. The input data, consisting of the identification number and amount of each food consumed by each subject, is then read into the computer, and data processing proceeds according to the stored instructions. Instructions enable the computer to search, by means of the food identification number, for the appropriate food in the stored table. This retrieves the elements, which are the numerical values in the food composition table. The resulting printout presents the nutrients and nutrient percentages. The results are available as a written record as well as stored for later use of data. Data are collected for the program by means of nutrition forms. These forms are key punched to generate the input cards. There are three (3) card types utilized: nutrient cards, percentage cards, and food composition cards. In each type there are multiple cards, which are read on the magnetic tape for storage and retrieval purposes. The diet data is used to appraise caloric intake. It is also used in conjunction with physical activity, physical examination, and demographic data for ongoing statistical investigations of the study population (approximately 500 high risk individuals).

Title of Study: The Cultural and Nutritional Components of Expenditure for Food by Working-Class Families in Colombia

Location: Michigan State University, East Lansing, Michigan

Report submitted by: Victor E. Smith

Initiation date: June, 1965 Probable completion date: Essentially complete in August, 1967

Principal investigators: Victor E. Smith, Dena C. Cederquist

Resume of study: Purpose and methodology: To determine (1) the least cost at which these families could have purchased the set of nutrients that they did purchase (which we called the nutritional component of expenditure for food) and (2) how much they spent in addition to this (which we called the cultural component of expenditure). To determine the cost and composition of least-cost diets that would provide adequate nutrition. To determine the least cost of adding specific nutrient or sets of nutrients to existing diets (the marginal costs of individual nutrients). To relate the levels of specific nutritional deficiencies to the patterns and levels of expenditure upon food and to the marginal costs of the individual nutrients. Method of data processing (for each of some 40 families) that would provide (1) the actual levels of nutrient intake, (2) diets at a minimum level of adequacy. (3) diets at the level of the allowances suggested by the Colombian Institute of Nutrition, and (4) the supplemental foods that would raise actual diets to each of the "adequate" levels in the least expensive way. In the same process we computed the marginal costs of individual nutrients for these diets.

Progress in Past Year: Cecilia A. Florencio has completed her dissertation, The Efficiency of Food Expenditure Among Certain Working-Class Families in Colombia.

Future plans: Papers reporting the results are being written.

Publications: none reported

Title of Study: An Economical Evaluation of the Nutritional Contribution of Food

Location: Michigan State University, East Lansing, Michigan

Report submitted by: Victor E. Smith

Initiation date: June, 1966 Probable completion date: August, 1967

Principle investigators: Jose D. Langier

Resume of study: Purpose and Methodology: To develop an index that would represent the composite nutritional significance of an individual food, taking account both of the nutrients contained and of the nutritional needs to which that food is to be applied. Method of data processing and plans for tabulation and analysis. This was a theoretical study, but a few least-cost diets were computed for Northeast Brazil, using both linear programming and this new technique.

Progress in past year: Jose Langier completed his dissertation, An Economical Evaluation of the Nutritional Contribution of Food.

Publications: none reported

Title of Study: Nutrition and Efficient Resource Allocation in Nigeria

Location: Michigan State University, East Lansing, Michigan, and the Consortium for the Study of Nigerian Rural Development, USAID, Lagos, Nigeria.

Report submitted by: Victor E. Smith

Initiation date: August 22, 1966 Probable completion date: August 31, 1968

Principal investigators: Victor E. Smith

Resume of study: Purpose and Methodology: To determine which agricultural activities can contribute most efficiently to the elimination of Nigerian nutritional problems. I have constructed a linear programming model of Nigerian agriculture which relates agricultural production to human nutritional needs and will enable me to answer questions such as the two following: (1) Can the protein scarcity be attacked most efficiently by expanding specific animal industries or specific field crop production: (Presumably the answer will vary among the six ecological regions into which I've divided the country.) (2) Would expanding domestic food production or export crops that can be exchanged for food be the more economical means of increasing the level of nutrition available to the Nigerian people?

Progress in past year: The model has been constructed, the data have been collected, and we are almost ready for computer runs of preliminary versions of the problem.

Future plans: I expect to have some results by the summer of 1968.

Publications: "The Livestock-Human Nutrition Balance in Nigeria," in Papers on Nigerian Rural Development, presented at the East Lansing Conference held at Michigan State University, May 1-2, May, 1967. Pages I-1 to I-11.

Title of Study: Evaluation of Nutritional Status of Preschool Children in the United States

Location: Ohio State University, Department of Pediatrics, Children's Hospital, Columbus, Ohio.

Report submitted by: Katherine Hedges, R.N., M.P.H.

Initiation date: July 1, 1966 Probable completion date: June 30, 1971

Principle investigators: G.M. Owen, M.D., P.J. Garry, M.S., K.M. Hedges, J.E. Loew, Ph.D.

Resume of study: Purpose: To evaluate nutritional status of a properly selected representative sample of the total population of children between the ages of one and six years in the United States. Methodology: Trained interviewers having a foods and nutrition background visited in each child's home on three successive days to obtain socio-economic information relating to nutritional experiences throughout his life, as well as to determine what food the child consumed during the three-day interval. Within the following week, the child's medical history was reviewed by a nurse, his height and weight were measured and a physical examination was performed by a pediatrician. Stool specimens from 80% of the children (Mississippi study) were examined for intestinal parasites. Urine specimens were obtained at the time of the clinic examination and qualitative tests were made for protein and glucose. Later, the urine was screened for aminoaciduria and determinations of creatinine, nitrogen and iodine were made in addition to thiamine and riboflavin assays. Hemoglobin and hematocrit determinations were completed during the clinic examination and subsequently, determinations of plasma iron, total protein, albumin (also electrophoresis of plasma and transketolase were made in the core laboratory. Data Processing, Tabulation and Analysis: All questionnaire forms, diet records, medical physical, and laboratory forms have been designed for direct keypunching. A 6400 Computer Program in FORTRAN is being used to read the data from punch cards and format the data into a magnetic tape record. The U.C.L.A. Biomed computer program has been utilized to provide a print-out and average values (standard deviation of mean, range, etc.) for all laboratory data by sex and age groups of 12-24 months, 25-48 months, and 49-72 months to yield some ongoing information on the population being studied. Development of a computer program for calculating the nutritive value for each food item consumed was delayed by the late arrival of the punched cards for the United States Department of Agriculture Coding Manual we are using. This manual was developed to handle data from the U.S.D.A. Food Consumption Survey of Individuals, Spring, 1965. In most cases, the nutritive value of food items is taken directly from Agriculture Handbook No. 8; however, average values for foods available on the commercial market have been included as well as numerous values from commercial food companies for prepared foods. In addition to the 1,880 cards provided by the Department of Agriculture, it will be necessary to create between 200-300 cards for food items not included in the original manual. Once these new cards are created, a program will be developed that will use this table of nutritive values to calculate the amount of water, food energy, protein, fat, carbohydrate, calcium, iron, vitamin A, thiamine, riboflavin, niacin, and ascorbic acid contained in each food item consumed by the child during the three-day period. These values will then be entered into the child's record on magnetic tape. There are many types of tabulations, enumerations, and correlations that can be made on data contained on the magnetic tape record. But initially only the following programs will be developed: (1) Correlation between age, race, and census tract (Columbus study). (2) Comparison of height and weight versus norms. (3) Summarization of total and average nutritive values of the child's diet in relation to the recommended dietary allowance. (4) Comparison of laboratory results in relation to norms.

Progress in past year: The laboratory has been completed and all of the above determinations are available with the exception of the urine thiamine and riboflavin determinations which are completed by Unglaub at Tulane. Two pilot studies have been completed: 150 children were studied in A computer program for the input and output of the Columbus study has been completed and initial output on laboratory and clinical findings have been obtained.

Future plans: A representative sample of the total population of preschool children in the United States will be selected. It is hoped that this sample could be drawn from no more than forty areas and data collection completed within the next two years. Judging from our experiences in Mississippi, it seems that temporary employment of a number of dietary interviewers in each area is not practical. The alternative which is most desirable is to have a reasonably heterogenous group of interviewers employed with the survey for a minimum of a year. The questionnaire format will be shortened and it is possible that subjects will have a 24-hour diet recall and one-day diet record rather than the more extensive 2-day diet record and 24-hour recall. Random subjects are being evaluated in Mississippi in order to help us determine the relative merits of the 24-hour recall alone versus a 24-hour recall and two-day record kept at home. Because the children now being studied in Mississippi with the two-day record are also having the 24-hour recalls, as was true in Columbus, we should have sufficient information upon which to base a sound decision in this regard. In general, it appears that the 24-hour recall alone is probably inadequate but a 24-hour recall and another day's record at home together are probably as good as the recall and two-days record. With shortening of the questionnaire, modification of the diet intake record as just discussed and slight alterations in the clinic program, it should be possible to interview and examine between 75 and 100 children a week. Two pediatric examiners could easily manage the clinical assessment of 100 children a week with current procedures, as long as that number of children were reasonably evenly distributed over a five-day period and if there were two people (nurse or physician) available to review medical histories, measure heights and weights, perform venipunctures, and, when indicated, obtain electrocardiograms. Description of Output: (1) Assessment of nutrient intake of each S.D., S.E. and range of daily nutrient intake for age, sex and race groups. (3) Percent contribution of selected nutrients from each food and/or food group to total nutrient intake. (4) Percent adequacy of nutrient intake: (a) in relation to our standards (b) in relation to Recommended Daily Dietary Allowances. (5) Grams of each food or food group consumed with average minimum and maximum per caput gram weight per day (average of 3 days). (6) Percentage of sample in each age, sex and race group consuming specified food items and/or food groups. (7) Nutrient relationships: (a) calories - percentage of calories derived from: (i) protein (ii) fat (iii) carbohydrate (b) protein - percentage of total protein derived from: (i) animal sources (ii) vegetable sources.

Publications: GARRY, P.J and OWEN, G.M AUTOMATED MICRO DETERMINATION (100 ul) OF SERUM IRON AND TOTAL IRON BINDING CAPACITY. Technicon Symposium (Oct)1967.

GARRY, P.J and OWEN, G.M AUTOMATED SCREENING TECHNIQUE FOR VITAMIN C ASSAY REQUIRING SMALL QUANTITIES OF BLOOD. Technicon Symposium (Oct)1967.

Presentations: Owen, G.M, Garry, P.J, Hedges, K.M, Lowe, J.E and Zacherl, W.A THE UNITED STATES TODAY - IS IT FREE OF PUBLIC HEALTH NUTRITION PROBLEMS? Presented to Amer Public Health Assn (Oct 24)1967.

AHN-BEER, CARIN von, Planning Director of Hospital Dietetics, Federation of Swedish County Councils (Personal communication, April 1968).

WESTIN, S.I DIETARY COMPUTATION APPLICATIONS. (Electronic computers in the Processing of Dietary Surveys.) National Inst of Public Health, Stockholm 60, Sweden. Dept Nutr and Food Hygiene. (June 10)1964. (Noordwijk aan Zee, Netherlands)

Extract: "By recording the dietary habits among different groups of people conditions are treated in an objective way to gain information as to which eventual changes are desirable from a physiological point of view. Especially the development towards more collective feeding i.e. canteens, school meals, military catering, hospitals, nursing homes and homes for elderly people just to mention a few where the private person cannot to a large extent choose his food himself, means that those responsible for catering have to be sure through continuous analysis of their menus that the food they offer is optimum." "One of the limiting factors of the logging of dietary habits and in larger extent the parallel nutrient surveys are from the staff viewpoint the time consuming and comprehensive manual mathematical calculations which are required." "By using the possibilities presented by the electronic data processing technique, presumptions can be used to make surveys quicker, mathematically more reliable, more favourable economically and also to a large extent more systematic." "By registration of dietary habits and following changes which perhaps are required to fill the demands of an optimum diet conditions should be made to improve the dietary habits and the nutritional and health conditions of a large part of the population." "Computers for processing of dietary surveys have been used by the Nutrition Division of the National Institute of Health in Stockholm since the summer of 1962. The computer is a 1401 with 16000 pos. core storage."

MONAGLE, J.E (Personal communication, June, 1968) Chief, Nutrition Division, Dept of National Health and Welfare, Canada.

Extract: "The Canadian Council on Nutrition last year established a committee to investigate the feasibility of developing a uniform food coding system for use throughout Canada. It was agreed by those who have been working in the area that a uniform coding would be advantageous and most have given a tentative commitment to employ a uniform code when it is established. The Council re-established the above committee this year with a commitment to develop a uniform coding as soon as possible. There has been one meeting of a small working party, but we have been unable to schedule a meeting as yet of the whole committee due to conflicts of academic and travel schedules. To date the various systems now in use have been compiled and compared, but there is not a definitive approach to decision on a uniform system. We are not ourselves employing any computer processing, since our activities are purely consultant in nature. So far as I can see, any reference would be to the fact that the Canadian Council on Nutrition has a committee studying the matter, and that there is recognized urgency in developing procedures for application of computer processing to nutritional data."

RESEARCH PROJECTS: U.S. PUBLIC HEALTH SERVICE

COOPERATIVE INFO CENTER ON HOSPITAL MANAGEMENT STUDIES John R. Griffith, Associate Professor and Associate Director, Program in Hospital Administration, School of Business Administration. Univ of Michigan, Ann Arbor, Michigan.

This application is a request for support and extension of the services of the Cooperative Information Center for Hospital Management Studies. The Center was formed in 1964 under a grant from the U.K. Kellogg Foundation, and has the cooperation of individuals from 13 universities and several national health care organizations. The purpose of the Center is to find and to disseminate information on all forms of research or analytic study of hospital or hospital-related problems. To do this the Center: (a) Accepts, abstracts, and classifies studies in its area. (b) Publishes Abstracts of Hospital Management Studies, a quarterly with a national circulation of 1,100 as of December 1964. (c) Makes available through microfilm and xerox, copies of studies which might otherwise be difficult to obtain. Approved for 2 years at a general level of support of $38,861. (1/1/66 - 12/31/67).

A DEMONSTRATION OF REDUCING HOSPITAL COSTS BY SHARING SERVICES E. Gartly Jaco, Ph.D. Associate Professor, Program in Hosp Admin, Univ of Minnesota, Minneapolis, Minn. Sponsoring institution: Twin City Hosp Assoc, St. Paul, Minn.

This is a demonstration-research project having two major aims: (1) To determine ways and means of reducing hospital impairing their existing level of functioning, and (2) To assess the results of such sharing as precisely and accurately as possible so that a valid determination of any accured savings by such sharing can be derived and in turn reported to other interested parties. Each service area determined as feasible for sharing between four voluntary general acute hospitals will be studied in terms of costs and operations for a period of 6 months. One of the hospitals will serve as a "control-hospital" which will not share that particular service, thus serve as a quantitative baseline for comparison of costs with the sharing hospitals for that particular service during the same time-interval. At the end of each study-period the costs of operating that service while shared and not shared by the hospitals will be analyzed statistically for significant differences. The results will be evaluated by the administrative staffs and the project staff at which a decision will be reached as to whether or not the hospitals will continue to share each service, including the control-hospital. A record of daily problems, developments, decisions, and functions will be maintained along with cost accounting data and will be included in progress and final reports to be made available to interested parties. Approved for 3 years, 11½ months at a general level of support of $221,756. (6/15/65 - 5/31/69).

DIGITAL COMPUTER AND PATIENT CARE: A PILOT STUDY Robert F. Maronde, M.D., Associate Professor of Med and Pharmacology, School of Med, Univ of Southern Calif, Los Angeles, Calif.

Using automatic data processing methods, a digital computer, and sophisticated statistical theories, this study will attempt to obtain quantitative information on the incidence of drug reactions in the large inpatient and outpatient population of the Los Angeles County Hospital This will require reporting of as many drug reactions as possible, (numerator) subject to constraints on recognition, processing time, and storage on the computer and quantitative information on the individual and correlated use of various medications (denominator) with regard to dosage and chemical constitution. Approved for 3 years at a general level of support of $285,774. (1/1/67 - 12/31/69).

INSTRUMENTS FOR PREDICTING ABSENTEEISM AND TURNOVER Edward S. Ferrell, Director, Systems Devel Dept, Univ of Alabama Med Center, Birmingham, Alabama.

The broad objectives of this research proposal are to provide hospital management with a methodology for ascertaining the absenteeism and turnover of employees by total group, factors. The prediction instruments should provide an evaluation mechanism for management to use in the basic screening of employees. This approach with expanded research should lead to alternatives in the selection of employees. Approved for 2 years at a general level of support of $32,816. (6/1/65 - 5/31/67).

LINEAR PROGRAMMING OF MENU PLANNING IN HOSPITALS Joseph L. Balintfy, Dr. Eng, Associate Professor of Operations Research and James W. Sweeney, Ph.D., Director, Tulane Computer Center, Tulane Univ, School of Bus Admin, New Orleans, La.

In the first phase, a primal linear programming model shall be solved on a digital computer, for nutrient vectors of several thousand a.p. food items, satisfying recommended dietary allowances at minimum cost. Another large set of nutrient vectors shall be constructed from a variety of feasible menu item combinations, satisfying daily menu requirements and including aspects of the primal solution. The second phase will include the central design and evaluation of the operative implementation of a system of computer applications for writing optimal menu plans. A computer code will be used in the Tulane Biomedical Computing System to provide experimental menu planning service for several local hospitals. Approved for 5 years at a general level of support of $293,914. (5/1/62 - 6/31/67).

MATHEMATICAL MODELS FOR SELECTIVE MENU PLANNING Ronald L. Gue, Ph.D., Director, Res Division, Center for Health & Hosp Admin, Univ of Florida, Gainesville, Florida.

The objectives of this project are to develop and refine the methods of mathematical programming for the planning of selective hospital menus. Further, the project aims to implement the methods developed in an operating hospital dietary system. Approved for 2 years at a general level of support of $29,835. (5/1/66 - 4/30/68).
